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BRIEF REVIEW OF THE PRESENT TRENDS AND NEEDS OF MEDICAL PRACTICE

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MEDICINE, like the footsteps of man with whom it is inseparately associated, can be traced far into the background of prehistoric times. The dawn of history casts a dim light on its vague shadows and watches them take form, grow and develop within the sacred temples of our ancient ancestors of India, Egypt and Babylonia. Centuries later, under Greek culture, medicine undergoes a complete metamorphosis. Form, weight and measure under meticulous observation, reinforced by profound ratiocination give it a scientific foundation. Fact replaces faith. The birth and growth of Christianity, however, warms the cold facts of science; altruism cements the structure of medicine; and an all-pervading humanitarianism enriches and ennobles its future course, purpose and destiny. Then as man marches through the centuries, discovering, inventing, developing and improving endless means and methods for better living, medicine, like his shadow, not only shares in these accomplishments, but frequently aids him in wresting additional secrets from nature's unlimited and prodigiously rich reservoir. Slowly and gradually it becomes intermingled inextricably with all phases of individual, group, social, economic and industrial life. Co-operation, co-ordination and adjustment between medicine and the other institutions of human life take place incessantly in its evolutionary processes. And thus, from one man experimenting with a single

herb for medicinal purposes arise through the pages of history embracing centuries, thousands of doctors, dentists, nurses, hospitals, pharmacists and drug manufacturers serving millions and millions of people. With unbelievable rapidity general improvement in medical care forges ahead in the whole world, but in the United States of America it literally reaches a peak of a Golden Era. Yet, while this country is enjoying the best practice of medicine ever known in history of mankind, the government proposes to make a certain change. It plans to federalize medicine so that the public might receive better care and greater benefits. Why? Let us look at the record.

Physician-Hospital-Public

According to Fishbein, there are today in the United States 186,000 doctors licensed to practice medicine. Over 60,000 are now with the armed forces. The civilians have one doctor for every 1,500 people. In England they have one doctor for every 3,000 and in some parts of Germany one doctor for every 14,000 people. Comparatively speaking, there is no definite shortage of doctors in this country and the public is satisfied with the number and quality but not with the distribution.

There are around 10,000 hospitals in the United States, but if we count the hospitals that are qualified or have 100 beds or more, there are only 6,700. It is generally conceded that hospitals of less than 100 beds operate inefficiently

Presidential Address, Ramsey County Medical Society, Saint Paul, Minnesota, January 29, 1945.

as far as medical care is concerned. Most of the small hospitals owned privately lack proper supervision, and therefore, require no further comment in the present discussion. The larger or qualified hospitals, naturally, according to their ownership, fall into three groups. The first, owned by the federal government, provides 30 per cent of all of the hospital beds in the United States and serves veterans, army and navy personnel, Indians, seamen, inmates and some of the employees of the federal institutions. As noted, these hospitals do not serve the general population. The second group comprises nonfederal government hospitals owned by states, cities, counties and municipalities. They are general hospitals built often by equal contributions from public subscription and public taxes and constitute only about 25 per cent of all the general hospital beds. In some communities, where no other hospital exists, these hospitals admit private patients also and thus receive sometimes as high as 50 per cent of their running expenses from such sources. The third group embraces the voluntary hospitals. In 1943 the voluntary hospitals received about 75 per cent of all admissions to the general hospitals. They operate under a nonprofit charter and form the backbone of the public hospitalization structure. Created by philanthropy, religious groups and public-spirited individuals, they depend exclusively on the pay-patient for their existence. Under ordinary circumstances the voluntary hospitals supply the public with sufficient beds to satisfy all needs. Too many of these hospitals, however, are found in congested and heavily populated centers and not enough in sparsely settled areas. The distribution is faulty.

The last link in the chain involved in the practice of medicine is the public. It receives and pays for medical care and service. Naturally, it must have an adequate income in addition to what it spends on the necessities of life to meet the cost of medical care. Although the income may vary somewhat from year to year for everyone, yet, like the national income, it is very uneven. Michael M. Davis, Chairman of the Committee on Research in Medical Economics, states that in 1935-1936 (average national income during peace) more than one-third of the families had an income of less than \$800.00. Only 2 per cent enjoyed an income over \$5,000.00, and 10 per cent of the population had nearly 36 per

cent, or more than a third, of the total national income. While such uneven distribution of income persists the lower third cannot afford to pay for medical care. It must seek out medical services planned and administered for the indigent. The remedy is economic. The medical profession, however, has contributed freely and generously to the relief of this segment of the population. Computing the cost of the medical services rendered gratuitously to patients at the Ancker Hospital, outpatient departments, dispensaries, and physicians' offices in Saint Paul, a city of 250,000 people, and applying the same yardstick to the nation as a whole, the medical profession gives charitably in service around \$500,000,000.00 annually. Nevertheless this kind of service is unsatisfactory because it cannot be either regulated or distributed equitably. And often too, what one gets for nothing is considered good for nothing. It would be better to get away from the cringing humility, vagueness and uncertainty associated with charity by placing medical care for this section of the population on a businesslike basis. The solution ought to be local. The local governments after raising a certain proportion of the necessary funds could seek state aid and federal grant to erect and equip hospitals in such counties or towns where they might be needed and put aside also a certain sum of money for their maintenance. Physicians, then, either on a part-time or full-time basis could render such people medical services becoming the dignity of free men. In time, perhaps, as this segment of the population would find employment with a better income, a certain portion might fall in the middle third and then participate in a prepayment insurance medical program. The upper third is no problem. It can pay for medical care at once or arrange payment in some instance over a period of weeks or months. The middle third of the population, however, clamors for and deserves some sort of relief from medical cost, especially during catastrophic illness or chronic invalidism. And strange as it may seem, all movements offering relief from medical costs aim primarily to aid the middle third of our population, the federal government not excepted.

Early Attempts to Reduce Medical Costs

In 1880 prepayment hospitalization was provided for the lumberjacks in Northern Minne-

sota by the hospitals located in Duluth and Superior. America's oldest railroad sponsored in the same year a mutual benefit association for the Baltimore and Ohio railway workers. The first project failed, the second succeeded and has paid to employees 34 million dollars in disability benefits, and to beneficiaries in death benefits \$32,800,000.00. After many successful years the failure of the lumberjacks' hospitalization plan in the event of disease or injury came almost over night, when a certain astute lumberjack identified acute alcoholism as a disease and entered the hospital for the necessary sobering-up processes. Others, when spring came, did likewise, so the hospitalization plan was discontinued. This unpleasant experience retarded hospitalization plans for several decades. The next move came from industry. In 1912, Montgomery Ward of Chicago purchased a "Group Insurance Policy," which provided life insurance for all its employees. Since 1918, the Endicott-Johnson Shoe Company, Binghamton, New York, "has provided full and complete medical care and hospitalization for all workers and all of their dependents without cost." This is truly an excellent plan. The company operates it and gives the workers and dependents an entirely free medical service with patient-physician relationship, choice of physician, access to specialist and unlimited hospitalization and examination. Then came the realization of the mounting cost of medical service with the advances in medicine from physicians as well as patients. University hospitals and private clinics, like the Mayo Clinic, the Crile Clinic, the Lahey Clinic, arose to meet the challenge. Workers organized "Group Medical Practice" to distribute the cost of medical care. Finally, general and life insurance companies began to nibble at this form of insurance. Slowly and gradually readjustments in the distribution of medical costs were forging ahead among the various groups of workers, employees, and employers in our population when the stock market crashed in 1929, depression followed and the "New Deal" struck everyone in the face. To legislate became a "cure-all." The last decade has seen a great general social revolution. Its effects reach not only our present entire social order, but also will carry over to many future generations. Naturally, when other groups in our social order were subjected to certain changes the medical profession could not be spared. So

on June 3, 1943, the Wagner-Murray-Dingell Bill was introduced in Congress.

The bill makes provision for free general medical special medical, laboratory and hospitalization benefits for more than one hundred ten million people in the United States.

The proposals include a plan to tax all employers for Social Security six per cent of the earnings of all workers (up to \$3,000.00 per year); payroll deductions of six per cent from the income of all employees (up to \$3,000.00 per year); and for the establishment of a fund of more than three billion dollars per year—out of which is to be paid medical care and hospitalization costs for all beneficiaries of the Social Security Act and for all of their dependents.

The bill proposes placing in the hands of one man—the Surgeon General of The Public Health Service—the power and authority:

1. To hire doctors—possibly all doctors—at fixed salaries to provide medical services.
2. To designate which doctors can be specialists.
3. To determine the number of individuals for whom any physician may provide service.
4. To determine arbitrarily what hospitals or clinics may provide service for patients. (N. P. C.)

Recent Studies and Methods to Spread the Cost of Medical Care

To oppose the proposed federal legislation all the agencies for the reduction of medical costs antedating the introduction of the Wagner Bill became not only more active but many new ones arose also. The Blue Cross hospitalization plan, founded in 1925, by intensifying its program has obtained 50,000 more subscribers every week. State and county prepayment plans became a household word in nearly every state in the union. Insurance companies broadened the scope of sickness, accident, surgical and hospitalization benefits. The most vigorous championship of medical rights and privileges came from the National Physicians Committee for the extension of Medical Service. This organization, created to take over functions which constitutional limitations prevented the American Medical Association from carrying on, "started in 1939 the first of a series of public opinion surveys." The Opinion Research Corporation, of Princeton, New Jersey, was commissioned in July, 1943, to conduct a nationwide survey to ascertain the opinion of the public on: (1) the status of physicians in the community; (2) the adequacy of medical care plans; (3) the availability and acceptance of medical care plans; and (4) compulsory health insurance. Briefly,

this study showed that the majority of the public was satisfied with the medical care and preferred the present status of the physician in the field to federal medical care. The medical care, however, although satisfactory was sometimes too costly for the average family. About two-thirds of the people favored some plan of prepayment insurance. Since 1943 very extensive studies under the leadership of the National Physicians Committee have been undertaken and published in pamphlets like (1) "The American People—What They Think About Doctors, Medical Care and Prepayment Plans"—"A Challenge to Private Enterprise"; (2) "Opportunity for Private Enterprise or Benefits for Business through Co-operative Group Insurance"; (3) "Proceedings of National Conference of Professions-Insurance-Industry on the Extension of Medical Care, Group Insurance and Employer-Employee Co-operation." Every physician who is interested in his profession and what is being done by the professions, industry, insurance and the public to prevent the politicians from destroying the present practice of medicine ought to acquaint himself thoroughly with the extensive studies and the excellent research work of the National Physicians Committee. Its policy reads:

Steps must be taken to make available to the indigent and low income groups the most effective medicine, medical practice and hospitalization that can be provided, and generally—provide the widest possible distribution of the most effective methods and equipment in medicine and surgery.

Program

The Management Committee has been instructed by the Board of Trustees to secure facilities, additional personnel, and take all necessary steps designed to:

1. Encourage the medical profession to active participation in the development of plans and the more general use of existing facilities to provide for easy payment of insurance against unusual or prolonged illness;
2. Educate the people to the importance, nature and value of prepayment facilities (within the framework of principles approved by the medical profession), now available for meeting the cost of unusual illness;
3. Investigate conditions relating to and inform industry concerning the principles underlying sound participation with employees in prepayment plans for meeting the cost of unusual or prolonged illness and hospitalization;
4. Inform private insurance underwriters of the opportunity that is being offered through co-operation in nationwide efforts to provide group insurance policies for those needing or desiring insurance against the hazards of unusual illness;

5. Encourage and provide state or local financial aid rather than Federal subsidies to insure effective medical care for the indigent;

6. Encourage contributors and friends to a greater degree of participation in the efforts of the National Physicians Committee in this constructive program.

"With the active co-operation of the individuals and the groups directly affected—the Professions, the Manufacturers, the Distributors, American Labor, the Insurance Industry, and American Industrial Concerns—steps can be taken which will bring relief to 100,000,000 people and provide a method of meeting the cost of unusual and prolonged illness and of hospitalization.

The committee has performed an outstanding service to the whole nation and under its excellent leadership, are united today, the professions, industry, business, insurance and most of the public in the fight against the usurping powers of the politicians. Some of the topics which have been discussed, studied or tabulated are: (1) political medicine, (2) individual service, (3) need for prepayment plans, (4) operation of medical plans, (5) people's opinion of plan operation, (6) opinions of physicians, (7) business benefits, (8) sharing the costs, (9) appraisal of group insurance, (10) weakness of group policies, (11) the employees' viewpoint, (12) typical programs and (13) statements of executives of business and industry. There are dozens of tables showing important, detailed and diversified information gathered by various approaches of research covering more than 1,300 firms employing over four million workers.

Two of the many tables are shown herewith.

With offices located recently in Washington, D. C., the Council on Medical Service and Public Relations of the American Medical Association stands ready to aid any congressman seeking information in regard to medical matters. It also examines and studies bills proposed to improve the medical care of the public. Today the American Medical Association under superb leadership maintains offices in Washington also, with similar functions and purposes.

While the American Medical Association holds in very high esteem the work of the National Physicians Committee and watches the growth and development of thousands of prepayment plans, it nevertheless has left the way open for other organizations by setting down a conduct for experiments as follows:

1. All features of medical services in any methods of medical practice should be under

REVIEW OF PRESENT TRENDS—LEPAK

TABLE I. ESTIMATES OF TOTAL COVERAGE AND VOLUME OF GROUP INSURANCE IN EFFECT

	Number of Master Policies	Number of People Covered	Volume of Insurance
Group Life Insurance..	36,000	14,700,000	\$24,000,000,000
Group Accident and Health	17,000	6,500,000	107,000,000
Hospitalization Insurance:			
Stock and Mutual Companies	23,200	6,430,000	110,000,000
Blue Cross, Etc.....	170,000	17,000,000	110,000,000
Surgical Benefits:			
Stock and Mutual Companies	15,200	4,566,800	30,000,000
Nonprofit Medical Plans	20,000	3,000,000	36,000,000
Or a total of nonduplicated insurance covering more than 25,000,000 individuals.			

the control of the medical profession.

2. No third party must be permitted to come between patient and doctor in any medical relation.
3. Patients must have absolute freedom to choose a legally qualified doctor of medicine.
4. The methods of giving service must retain a permanent, confidential relation between the patient and family physician.

It is apparent from the foregoing discussion that a large part of the public, many physicians, the American Medical Association and the National Physicians Committee united with the professions, insurance and industry are all working diligently together to find ready and accessible medical care for the whole population in order to defeat the proposed plans of the Federal Government supported by labor which might destroy the present form of medical practice. There exist, however, other divisions and organizations, especially among physicians, which would oppose Federally instituted medical care by methods never yet tried by the medical profession in this country, namely, boycotting. Such measures are advocated by the Association of American Physicians and Surgeons, founded in 1943, in a recent circular letter which read in part:

Simple Logic

Reduced to the simplest syllogistic form, the AAPS reasoning is as follows:

State medicine is a system that operates to distribute medical care;

Medical care cannot be distributed without the participation of physicians;

Therefore a system of state medicine cannot operate without the participation of physicians.

The courts have always upheld the right of an or-

TABLE II. THE OPERATION OF MEDICAL CARE PLANS

In the United States there are thousands of prepayment medical care and hospitalization programs successfully operating. Roughly, these can be classified into eight types as follows:

1. Company or Employee Medical Service Plans
2. Regular Insurance Company Group Policies
3. Medical Society Approved or Sponsored Plans
4. Union-Sponsored Plans
5. Co-operative Groups
6. Consumer-Sponsored Plans
7. Farm Security Administration Operations
8. Private Group Practice Clinics

It is estimated that such programs now provide prepayment facilities for approximately 25,000,000 people.

Company or Employee Medical Service Plans:

- (a) Endicott-Johnson which owns and operates three clinics and a hospital and furnishes free to each worker and all dependents all medical care and hospitalization.
- (b) Eli Lilly and Company which pays the total cost of insurance-disability, life, surgical care and hospitalization—for employees and their dependents.
- (c) Abbott Laboratories which pays a substantial part of the cost of insurance disability, life, surgical care and hospitalization—for all employees and their dependents.
- (d) Henry Kaiser who owns and operates clinics and hospitals and furnishes medical care and hospitalization for workers on a voluntary basis.

State-wide, Physician-Sponsored Medical Care Plans: Michigan and California Medical Service organizations which provide surgical and/or medical care to groups on a prepayment basis.

Local, Physician-Sponsored Medical Care Plans:

Kansas City, Buffalo and others, which duplicate for local areas the service of state-wide groups.

organization of individuals to do whatever an individual may lawfully do. Even the Wagner-Murray-Dingell Bill respects the right of the individual physician to refuse participation in its scheme for state medicine. It makes provision only for our voluntary participation. Hence:

An individual physician may lawfully refuse to participate in a system of state medicine.

An organized group may lawfully do anything an individual may lawfully do;

Therefore physicians as an organized group may lawfully refuse to participate in systems of state medicine.

And test this:

Systems of state medicine require more medical service and therefore more physicians than systems of private practice;

There are not more than enough physicians to supply the services required under the present system of private practice;

Therefore a system of state medicine would re-

quire the participation of at least a substantial majority of physicians.

Final conclusions, based upon the above conclusions:

Physicians may lawfully organize to refuse participation in systems of state medicine, which cannot operate without the participation of at least a majority of the physicians.

The AAPS is an organization of physicians who contract and agree not to participate in systems of state medicine;

Therefore when a majority of the physicians of the nation become members of the AAPS, systems of state medicine cannot be operated.

Very recently, observations showed the federal government taking a detour from the original plans proposed for medical care. In the first week in January, 1945, the Senate Subcommittee on Wartime Health and Education, after a two-year study of the State of the Nation's Health, finally rendered a report. The highlights in the report are quite startling. Of the 14,000,000 men caught in the draft,

- (1) 2,000,000 were fit physically,
- (2) 6,500,000 were accepted despite defects,
- (3) 2,250,000 were remediable,
- (4) 3,500,000 were hopelessly unfit.

In addition it found that:

- (1) About 40 per cent of the United States counties have neither full-time public health service nor any registered hospitals.
- (2) Distribution of doctors is uneven; eight times as many are in cities.
- (3) There are only 3,000 psychiatrists in the United States: not enough to treat the mental, let alone to carry on preventive work among children.
- (4) High quality medical care was available on a charity or low-cost basis to the poor in relatively few places.

To correct these deficiencies, the Senate Committee, headed by Senator Claude Pepper, after rejecting tax-supported medicine, voluntary insurance, compulsory insurance and other schemes found in the Wagner-Murray-Dingell Bills, proposed federal grants-in-aid to the state for improving local health services. It would "build hospitals and health centers, organize health departments where none exist, provide sewage and water supply systems, milk pasteurization plants, scholarships and loans to medical and dental students and complete medical care for the needy (through extension of Social Security Allotments)." (*Time Magazine* 1-15-45.)

Summary and Conclusions

1. In the United States of America flourishes, to the amazement of all of the other nations of the world, the most advanced and progressive type of medicine.

2. It serves adequately, however, about two-thirds of the population. To the other portion of the public it is not always accessible, because that segment of the population is either indigent or lives in areas where physicians are few and hospitals are often absent, and therefore, the general health of the nation suffers.

3. Remedies to relieve or spread the cost of medical care began as early as 1880. After the hospitals showed the way, industry followed and eventually the public and the physicians became all-absorbed in the issue. In 1943 the federal government manifested an unusual interest in the supply and cost of medical care by proposing the Wagner-Murray-Dingell Bill.

4. Research studies show beyond any doubt that the majority of the public wants adequate medical care for the whole population. Moreover, it clamors for the easement in medical costs. The choice is no longer between individual activity and government activity, but between "two types of institutional responsibility, private and public."

5. The private responsibility for medical care headed by the profession, industry, public and insurance companies consists of hundreds of prepayment insurance plans varying tremendously in scope in their benefits to, and protection of, the public health. Some of these plans are still in the experimental stage; others seem to already rest on a solid foundation. The staunchest champion of private responsibility for medical care is the National Physicians Committee.

6. The most recent efforts to assume public responsibility for medical care occurred in January, 1945, in the proposal by Senator Claude Pepper—a very tiny proposal compared with the Wagner-Murray-Dingell Bill—to provide grants-in-aid to states for improving local health services.

7. If eventually the federal government should succeed in taking over the medical profession the Association of American Physicians and Surgeons plans to have a sufficient number of doctors in the organization to boycott any such venture. This is not a laudable solution to anticipate. While it may be lawful, it has definite in-

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herent weaknesses. In England when the panel system went into effect, although many physicians were opposed to it, they nevertheless "fell into line" in a relatively short time, because soon embarrassed financially, they could not "stick it out."

8. It appears that a reasonable solution of adequate medical care for the whole population should take into consideration the economic situation of the people. For the upper one-third from the standpoint of income, obtaining good medical care is no problem. In the medical care of the lower one-third the local community and government ought to have the primary interest, control and administration. To erect, equip and maintain hospitals or centers of health, state-aid or federal grants-in-aid similar to what Senator Pepper recently proposed (without any strings attached) ought to be feasible. The middle third could receive adequate medical care on prepayment plans,

suitably adjustable to the industry, locality, hazards, et cetera, under private control, management and administration.

9. It is important to realize that medical care of the whole nation is in a state of flux. Under such circumstances it behooves the medical profession to be wide awake, to seek out each movement, current, or trend, or attempt to solve problems of medical care, no matter where they may arise, in order to lead, guide or direct remedies into a desirable channel. The humblest physician understands medical care better than the proudest politician and therefore should not shrink in wresting the reins from alien hands.

10. If we lose leadership in medicine it will be our fault. And we cannot fail if we have the public interest at heart. Let us work with a well-informed and reawakened public and we must succeed.

RINGWORM OF THE SCALP

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RINGWORM of the scalp is a term which is applied to superficial infections caused by several different fungi occurring chiefly in children before the age of puberty. The outstanding signs are the presence of patches of partial alopecia, stubby hairs due to breakage, lack of luster of infected hairs and varying degrees of inflammation. Certain forms of tinea capitis may spread relatively rapidly and even assume epidemic proportions unless the disease is recognized early and treated properly. It is thus important both medically and economically that the practitioner be familiar with ringworm of the scalp so that affected individuals may be isolated or cared for in such a way that spread of the disease may be reduced to a minimum.

It is well known that fungi flourish best in the horny layer of the skin's surface, since dead, keratinized substances offer the most favorable conditions for their propagation. It is not surprising then that the skin and its appendages, the hair and nails, are frequently affected. Bloch² and his school and others including George Lewis⁴

of New York and his co-workers have established the general rule that fungi which attack hairs can be divided into two main groups: (1) those which are highly contagious among human beings and less contagious in certain species of lower animals, and (2) those which are highly contagious in lower animals and less contagious in humans. Wise and Sulzberger¹⁰ have termed the first group "anthropophilic" fungi and the second group "zoophilic" fungi. The types of tinea capitis resulting from infection by these two main groups of fungi vary not only in their clinical characteristics and course, but in their epidemiology and degree of contagiousness among children. A still more important difference in the infections due to anthropophilic and zoophilic fungi is their response to treatment. This difference is so important that identification of the causative organism is absolutely vital in order to intelligently manage each individual case. Although, as previously mentioned, ringworm of the scalp may be caused by many fungi, by far the majority of cases are produced by microsporon audouini (anthropophilic) and micro-

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sporon lanosum (zoophilic). Infections caused by microsporon audouini are by far the most important because they are of the epidemic type and are resistant to forms of treatment except x-rays.

For simplification, tinea capitis can be discussed under three main headings:

(1) Infections caused by the aforementioned microsporon.

(2) Infections caused by trichophytons which penetrate the hairs (endothrix type).

(3) Kerion, a highly inflammatory type of infection, caused in most cases by trichophytons which do not penetrate but grow around the hairs (ectothrix type). Occasionally other fungi produce kerions.

Microsporon Infections

Microsporon, according to Lewis and Hopper⁵, cause about 80 per cent of all cases of ringworm of the scalp in New York. Microsporon audouini (anthropophilic) and microsporon lanosum (zoophilic) were about equal in incidence. Benedek and Felsher¹ in Chicago, however, on the basis of a study of 140 cases, found that m. audouini was responsible for 81.5 per cent of the cases, and m. lanosum for only 12.2 per cent of the cases. In Philadelphia, Livingston and Pillsbury⁷ found m. audouini in 96.2 per cent and m. lanosum in 3.1 per cent. It is the consensus among dermatologists in this vicinity that until the past few months almost all cases of ringworm of the scalp have been caused by the zoophilic organisms m. lanosum and trichophytons of the ectothrix type. Recently, however, as seems to be the case in other mid-western cities, there has been a sharp rise in the incidence of infections caused by m. audouini, a fact which should be of great concern to all practitioners since these infections are usually refractory to all forms of therapy except epilation by means of roentgen rays, while infections produced by zoophilic fungi (m. lanosum and others) as a rule, can be cured by topical applications alone.

Furthermore, m. audouini infections are highly contagious among children and spread rapidly in families and schools. Microsporon infections are characterized microscopically by the mosaic arrangement of tiny spores about the infected hair.

M. audouini causes so-called "gray patch"

ringworm. The infection begins insidiously in children under the age of puberty (almost never in adult life), and is usually first noted by parents or teachers who discover multiple small areas on the scalp in which the hair is lusterless and stubby. As a rule, there is slight scaling but only slight inflammation, a point which is important in attempting a clinical differentiation from the usually more inflammatory infections produced by m. lanosum. Benedek and Felsher¹, however, did not find this sharp distinction in their cases since many inflammatory lesions were produced by m. audouini. In fact, in their series, m. audouini produced kerion in seven patients as compared to five due to m. lanosum. All in all, however, it is the consensus that lack of inflammation points to infection by m. audouini.

In m. lanosum infections, there is frequently a history of contact with cats, dogs, or calves. There is usually pustulation and considerable crusting. The infection, though most common in children, may occur at all ages. The number of lesions is usually greater than in m. audouini infections. Although lesions on the glabrous skin may be caused by m. audouini, they are much more commonly produced by m. lanosum.

Trichophyton (Endothrix) Infections

Infections of this type are rare and hence will not be discussed in great detail. These fungi are characterized microscopically by the easily recognized chain formation of the spores in contrast to the mosaic arrangement of the spores in microsporon infections. Trichophytons of this type are anthropophilic fungi and cause a refractory type of ringworm of the scalp. Fortunately however, as in infections due to m. audouini, there is a high incidence of spontaneous cure at puberty. Rather than describe the clinical features in detail, I shall emphasize that it is important to cultivate the organisms in order to determine appropriate therapy, bearing in mind again that infections produced by anthropophilic organisms require epilation by x-rays.

Kerion

Kerion is a highly inflammatory carbuncle-like granuloma which is caused most commonly by trichophyton gypseum (zoophilic; ectothrix). It occurs usually on the scalps of children or on the bearded area or other hairy regions of adult males.

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As a rule the lesion begins as a patch of ordinary ringworm which, within a few days, becomes red, edematous, boggy and crusted and oozes pus from multiple orifices. The single

Discussion

The main purpose of this paper is to emphasize the alarming increase in the number of cases of ringworm of the scalp due to the anthropo-

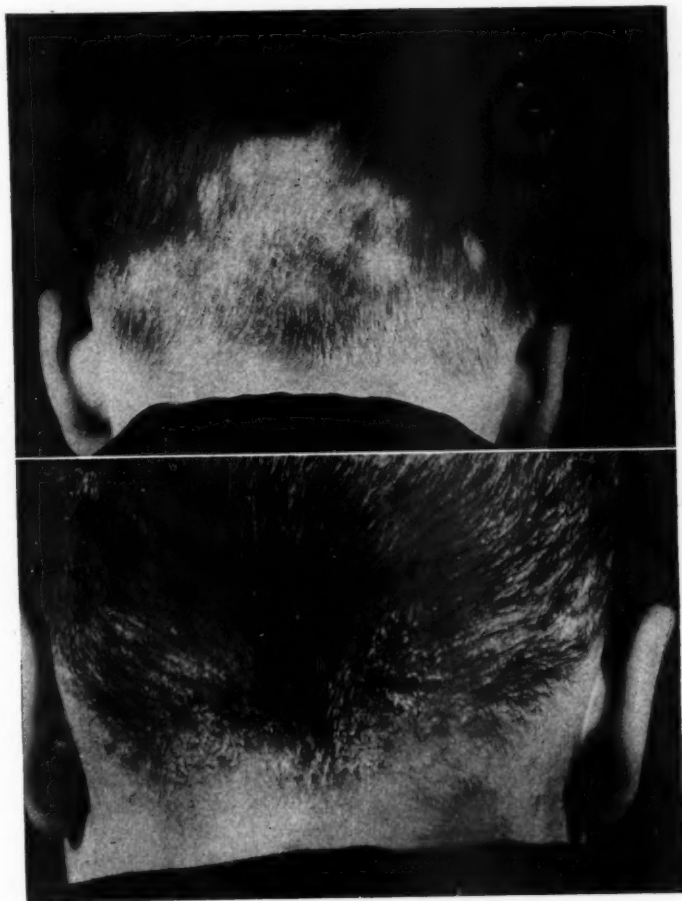


Fig. 1. Tinea capitis caused by *m. audouini*. Note the patchy alopecia with practically no signs of inflammation.

Fig. 2. Tinea capitis produced by *m. lanosum*. Lesions are erythematous, edematous, pustular and crusted.

lesions may become several inches in diameter and multiple individual lesions may coalesce to form a large granuloma. In contrast to carbuncle, pain is usually slight. The tendency is toward spontaneous cure in two or three months following shedding of the hairs due to the inflammatory reaction. Microscopic examination of the pus is usually negative while cultures usually disclose the causative fungus.

philic fungus *m. audouini* and to caution physicians against trying to cure them by means of topical applications alone. This increase in incidence of this form of tinea capitis may assume epidemic proportions in Minnesota especially in the larger centers of population if physicians do not recognize the disease and handle it properly. Such epidemics have been noted in eastern cities in the past few years and are now raging in Chi-

cago and other midwestern cities. It is absurd to assume that every practitioner can become an expert mycologist and this is unnecessary in order to cope with the problem which faces us.

If the doctor's index of suspicion is raised he will immediately think of ringworm of the scalp (due to *m. audouini*) when superficial, round or oval, single or multiple, almost noninflammatory and nonpus forming areas of partial baldness are seen on a child's scalp. No fine details of differential diagnosis need crowd the physician's mind since there are only two procedures which must be carried out in order to settle the diagnosis.

The first is the demonstration of the pathogenic fungus by direct microscopic examination of the infected hairs or scales. Broken off or thickened hairs at the edges of the lesions should be carefully selected and removed by gentle traction with a small forceps. Infected stumps are easily withdrawn. These are placed on a glass slide and a drop or two of 10 per cent potassium hydroxide is added followed by a cover slip. The slide is passed through the flame of a bunsen burner three or four times and then examined microscopically under high-dry power. If the slide is not clear it may again be heated. Crystallization of the hydroxide occurs on drying and interferes with proper examination. In this event more water should be added to redissolve the crystals. It is impossible to determine exactly the type of fungus by means of this examination, but it is possible to establish the diagnosis of ringworm.

The second step is to prepare cultures which may be sent to a mycologic laboratory in order to determine the exact type of fungus responsible for the infection. Infected material is obtained in the same way as described for making microscopic preparations and is inoculated on broth or agar mediums. (The Difco Company, 920 Henry Street, Detroit, makes a suitable commercial medium.) An expert mycologist can, within a week or two, identify over fifty types of fungi.

If the infection is found to be caused by an anthropophilic organism (usually *m. audouini*—occasionally an *endothrix trichophyton*) the physician should realize at once that x-ray epilation is required and that it is a serious mistake to use topical therapy alone.

A few years ago Peck and Rosenfeld⁹ brought

out the fact that certain fatty acids ordinarily found in human sweat are of distinct value in the treatment of various fungus infections of the human skin. Salts of propionic acid and undecylenic acid seem especially noteworthy. Kéney and Broyles⁸ reported that two of three cases of tinea capitis produced by *m. audouini* were well after the application of a 10 per cent sodium propionate ointment to the scalp three times daily for seven weeks. Further studies utilizing this type of therapeutic approach are indicated.

Excepting x-rays, the only other means of producing a defluvium of the hair of the scalp is by the administration of thallium acetate orally. The therapeutic dose, however, is not far removed from the lethal dose and so many grave toxic reactions and even deaths have resulted from the drug that the advisability of its use in ringworm of the scalp is highly questionable.

Epilation of the scalp with x-rays is a procedure which should be carried out only by a thoroughly trained and experienced expert. Thousands of cases have been epilated in large clinics in New York and other centers without accident, but if errors are made, permanent epilation may result. It is not within the scope of this paper to outline the details of x-ray epilation including the necessary preparations prior to therapy and the after-care following administration of the rays. Those who are interested may refer to MacKee's⁸ textbook on "X-rays and Radium in the Treatment of Diseases of the Skin."

Another procedure which is an aid in diagnosis and followup care of the patient with microsporon infections is examination with the Wood light. The latter utilizes ultraviolet light filtered through a special glass filter containing nickel oxide. (Such lamps are manufactured by the Westinghouse Electric and Manufacturing Company, Long Island City, New York, and the Strobelite Company, New York City.)

Tissues infected by fungi, as well as other substances such as scales, vaseline and blood give rise to a characteristic fluorescence when exposed to filtered ultraviolet rays. With experience it is possible to differentiate the fluorescence from various materials. Hairs infected by microsporon appear as bright, bluish-green stubs under the light. The Wood light then not only reveals the presence but shows the extent of the infection. Sometimes it is surprising to note widespread involvement under the light when clinical

examination suggested that only one or two infected patches were present. Following epilation the child should not be considered cured until two weekly examinations under the Wood light fail to show the presence of infection. A final examination a month later is advised by Lewis and Hopper.⁵

Topical therapy alone, using fungicides such as salicylic acid, ammoniated mercury, sulfur, anthralin and others, cure most cases of ringworm of the scalp caused by "animal" organisms such as *m. lanosum* and trichophytions of the ectothrix type. Three weeks to three months are required depending upon the severity of the case.

Summary

In Minnesota there is an alarming increase in the number of cases of ringworm of the scalp caused by *m. audouini*. In combating a similar but larger epidemic in New York, Lewis, Silvers, Cipollaro, Muskablit and Mitchell⁶ made the following excellent suggestions:

(1) Co-operation between the Health Department, dermatologists, clinics and school authorities is essential.

(2) The Health Department should lead by declaring the disease reportable, surveying schools periodically, setting up diagnostic clinics where the disease is prevalent and disseminating information to the public.

(3) Filtered ultraviolet rays (Wood light) are essential in case finding and in determining when cure has taken place.

(4) Infections caused by *m. audouini* should promptly receive x-ray therapy. Local measures are usually ineffective.

(5) Communities free of the disease should take active steps to prevent it or localize any nidus that appears. The small expense necessary to inaugurate and sustain such a plan is in no way commensurate with the probable benefits to be obtained from such a far-sighted effort in the interest of public health.

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NURSING IN RURAL HOSPITALS

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WE are all interested in the care of the sick. Hospital and nursing service have become an integral part of that care. The trained nurse has given nursing the human or, shall we say, the Divine touch, and made the hospitals desirable for patients with serious ailments regardless of their home advantages.

Today the rich patient, who can pay the price, or the poor patient who can pay nothing, may secure the highest services in sickness. But how about the great middle class who, neither rich nor poor, would be glad to preserve their self-

respect by paying to the limit of their ability? Can a hospital give the minimum standard care to its patients without the most highly trained help? We believe it can. If the hospitals have competent physicians and surgeons and a well-trained superintendent of nurses with intelligent and willing student nurses, much can be accomplished to attain this standard of care in a comparatively short time. Much depends upon the individual student, whether she has a sincere desire or a compelling force from within or without to give the necessary care to the sick patient.

The patient sends for the physician first. The physician secures a nurse, if desired, or sends

¹Read before the Annual County Officers' Meeting, Saint Paul, Minnesota, February 24, 1945.

²Part of symposium on Postwar Medicine in Minnesota presented at the Annual County Officers' Meeting, Saint Paul, Minnesota, February 24, 1945.

the patient to the hospital. The doctor must assume the responsibility, even though the patient dies from an accident in care. Therefore, if we train our own nurses, they know what we expect of them in the care of our patients. In the smaller hospitals, the doctors are much closer in touch with their patients; therefore they keep better informed as to the condition of their sick patients.

Nursing is as old as mankind. It is perhaps the most inborn attribute of the woman's life. The word nurse comes from the Latin "nutrio" signifying "to nourish at the breast." From this original meaning it has come to be applied to *all* who care for others during days of sickness and suffering. No group of women, such as the Registered Nurse, can ever take the term nurse to apply exclusively to themselves. It belongs to all women, of all races and creeds.

Nursing is primarily a thing of the heart rather than the mind. It will remain an art of technique which consists of securing as much physical and mental comfort for the patient and family as possible. Nursing is not primarily one of the learned professions, such as the Arts, Sciences or History. A college degree is not necessary. A woman may have all the knowledge and still not make a good nurse, or she may have little knowledge, as far as schooling is concerned, and be a wonderful nurse. Nursing is not a trade like that of a mechanic or a carpenter. A carpenter is a carpenter but if he goes to college, he becomes an engineer or an architect. Now nursing is but one thing; the art of taking care of the sick, and it does not require a college degree to master the art. There is just as great a need today for a capable trained practical nurse as there ever was.

It has been our opinion that the qualifications for a good nurse are character, good health, a strong constitution and physical endurance. A high school education is desirable but not absolutely essential for the success of a good nurse. Any intelligent girl or woman can master the art of nursing in a year or two. Sometimes a liberal education is of more importance than an academic degree because it fits a nurse into the interest of her patients. She must learn to assume definite responsibilities and, at the same time, learn to refuse to accept responsibilities which are not rightfully hers.

The practical trained nurse is often better

liked in private cases than any others because she has been dealing with the problems of the home and is proficient in household management, whereas, the registered nurse has been completing her high school education and from three to five years of college and hospital training, and although her training has been efficient, she has had little in the way of home management.

Experience has shown that we have had better professional ethics displayed by our trained nurses than with most of the neo-physicians embodied in the highly trained registered nurses. They carry out all orders, as directed, and there is no presumption on their part of outlining the management of the case and suggesting methods of treatment. She won't try to impress the patient by trying to take over some of the doctor's duties as well as giving nursing care.

We have conducted a Practical Nurses' Training School in the Marshall Hospital since 1912. Our student nurses are selected from all walks of life. A high school education is desirable but not essential to enter our training school. We try to have eight nurses in training so that two new students enter training each six months. This gives us two senior nurses at all times. This procedure has many practical advantages because the seniors act as instructors for the beginners and they also give a great deal of nursing care to the patients in the hospital. The senior nurses are used, if necessary, for special duty and are taken into the homes for home obstetrics. Most of the last six months of training is spent in surgery and obstetrics. During this time they are given instruction as instrument nurses, preparation and sterilization of surgical supplies; the giving of anesthetics and assisting at operations when necessary.

The required course of training could be completed in less than two years' time but by this system we have an opportunity to give these young women a more thorough training. We are undoubtedly a little selfish in this respect because we receive in return for their training a certain amount of nursing care. Our student nurses are furnished their uniforms, room, board and laundry and in addition we pay them \$8.00 per month for day duty and \$10.00 per month for night duty. The students purchase their own books.

The student nurses work seven days a week from seven to seven with two hours off each day

and half days once a week. They attend lectures from 7 to 8 p.m. six days a week for nine months each year. The practical nursing is given by the superintendent of nurses with bedside care directed by the staff doctors.

Our superintendent of nurses is a woman we have trained and who has been with us for twenty-four years. She gives the practical nursing instruction to the students. She conducts the classes in The Art and Principles of Nursing and Dietetics. She administers all the general anesthetics and has general floor management of the hospital. You men who have operated a small hospital know what a treasure this type of nurse is to any institution. It becomes a part of them and they do a grand job and never complain regardless of how many hours they give to the care of the sick. How many registered nurses on the forty-eight hour a week schedule would do this for humanity?

The teaching of the subjects are conducted by the physicians on the hospital staff. The students are given oral and written examinations at frequent intervals. Completion of studies in the following subjects are required for graduation:

1. Anatomy and Physiology, Text: Kimball, Gray, Stockpool.	36 hours
2. Obstetrics for Nurses, Text: DeLee and Comer	18 hours
3. Materia Medica for Nurses, Text: Dock and Quimby	18 hours
4. Dietetics, Text: Pattee	18 hours
5. The Art and Principles of Nursing, Text: Pope and Young	72 hours
6. Toxicology,	12 hours
7. General text: Reference Hand Book for Nurses. Amanda K. Beck and Lyla M. Olson.	

Upon completion of the required courses the graduates are given a diploma of graduation and an enameled nurse's pin with the nurse's name and date of graduation engraved on the back.

In the interest of the sick we strongly advocate the return to a two-year nursing program in the smaller hospitals. We would like to suggest that a definite standard training course be recommended for general use throughout the state, especially for the rural hospitals. We feel that the State Medical Association should appoint a committee of operating doctors of small

hospitals and small hospital superintendents to formulate such a practical training school program which is so essential to our patients and ourselves.

In conclusion, I would like to leave a few thoughts for our registered nurses. What can we do to maintain the professional life and dignity of our present four- and five-year graduate nurse program; can we help them to help themselves? They are overtrained for nurses and undertrained for physicians. There is a definite place for these graduates and by virtue of their advanced and specialized training we must look to them as our chief nurses in our hospitals and as physicians' aids. They are the nurses, too, who are to enter the Public Health, Industrial and Community nursing services.

Practical trained nurses should receive competent and experienced graduate supervision in the hospitals. To secure adequate graduate nurse supervision is one of the most important functions of efficient hospital management. Supervision of the undergraduate in the two-year nursing program means much more than the name implies. It means the establishment of efficient relationship of nurses, patient and medical service. To do this successfully requires tact, ability, education and experience not possessed by the undergraduate. The value of the superintendent of nurses lies in her understanding of her work. The superintendent forms the necessary connecting link between the instruction received in the classroom and its application at the bedside of the patient.

When the hospital is dependent upon its school of nursing for all or nearly all of the nursing care of its patients, it becomes necessary that the students shall have thorough instruction and competent supervision.

Nursing service helps restore the patient to his normal physical condition, enables him to continue the ordinary pursuits of life and promotes his happiness and well-being. It must be the best nursing service our hospitals can furnish.

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LOCAL HEALTH SERVICE—A PROPOSAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

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TO avoid misunderstanding in the use of terms and to provide a reasonably precise basis for discussion, let us agree that the purpose of public health services is to apply the sciences of preventive medicine, through government, for social ends. This excludes concern for the illness of the individual and its treatment by the practitioner of medicine, except in respect to the bearing of the particular case of disease upon the occurrence of previous or subsequent cases related to it by some common or preventable factor. This definition excludes from the field of public health as a function of civil government, the organization, financing and distribution of services for diagnosis and treatment of general sickness.

Representative civil government is the creation and should be the servant of society, not the benefactor or agent of the individual. Accepting this limiting definition for our present purposes, we can specify the six basic services required and authorized by law under the police powers reserved by our constitution to the sovereign states. These six functions will be found to be undertaken with more or less success wherever government has accepted the responsibility and seriously attempted to make effective the knowledge of the sciences of preventive medicine. They are: (1) Vital Statistics, the recording, tabulation, interpretation, analysis, and publication of natality, morbidity and mortality; (2) Control of communicable diseases, acute or chronic, sporadic, endemic or epidemic; (3) Environmental Sanitation, including food and milk control, drugs, and the conditions under which people work for their livelihood; (4) Public Health laboratory services; (5) Protection of maternity, infancy and childhood, the field of human genetics, reproduction and replacement; (6) Health Information other than as provided for in public schools or institutions under educational authority of the state.

There are four levels of health administration affecting the people of the United States:

1. *International*, by sanitary conventions and

by agreements as to standard products and practices, and epidemiological services.

2. *Federal*, in respect to foreign and interstate commerce, standards for biologicals, advisory specialist consultation and emergency aid at request of states, grants-in-aid for state and local health services.

3. *State*, for standards of personnel and performance, consultant, advisory, laboratory, statistical, engineering and educational services. Operation of district health organizations and supervision of standards of local health performance, together with financial aid to local governments.

4. *Local*.—The actual performance of the six standard health functions: Vital statistics, communicable disease control, environmental and industrial sanitation; public health laboratory service; maternity and child hygiene; health education. These are direct services to or for persons, families and communities, within the jurisdiction of some unit of local government, village, town, city, county, or other.

About 41 million of our people are living in communities where there is no full-time medically directed local health service, and many of these communities have either no personnel, no health department, no health board or only part-time employees who have no professional or vocational training for the work.

To correct this and meet the spirit of resolutions passed by the House of Delegates of the American Medical Association in June, 1942, and by the Governing Board of the American Public Health Association in October, 1942, and by the State and Provincial Health Officers of North America in March, 1944, a committee on Local Health Units was appointed by the American Public Health Association to study the situation and present a plan for total coverage of continental United States with an adequate local health service.

The report will be published by the Commonwealth Fund in June of this year.

The following three essentials of the proposal

LOCAL HEALTH SERVICE—EMERSON

are assumed: (1) that one dollar per capita is not more than any but the poorest community can afford per annum for local public health services; (2) that the medical health officer should receive a salary approximately the equal of the net professional earnings of a good internist or surgeon of the vicinity; (3) that to justify such a qualified health officer there should be certain essential kinds and numbers of assistant full- and part-time personnel.

The smallest unit of population that can support such a local health department and its staff is one of about 50,000 persons. To do a good basic minimum local health service for 50,000 people there is required a group of sixteen full-time employees: one health officer, ten public health nurses, one sanitary engineer and one sanitarian of nonprofessional grade, and three clerks. Part-time clinical services for tuberculosis, venereal disease, and child hygiene and part-time dental services will be needed, and diagnostic laboratory services at local or state expense.

Larger units of population can afford statistical clerks, full-time bacteriologists, veterinarians, full-time dentist or dental hygiene and health educator personnel within the dollar per capita.

There are in our forty-eight states about 38,000 jurisdictions of local government apart from school districts, some with as few as 150 persons. This number includes 3,070 counties, many of which have populations far below 50,000. Less than 1,000 of these have full-time local health departments now. The problem before the committee was to suggest such combinations of adjacent local government jurisdictions as would include a minimum of 50,000 population each, using the county as the least practicable unit of local government and in all instances including any city in a county within a single or multi-county health unit.

In collaboration with the state health officers, 1,197 units were agreed upon in principle covering the forty-eight states and the District of Columbia.

Of these suggested units

1. 36 (3.0 per cent) have populations of less than 30,000.
2. 130 (10.9 per cent) have populations from 30,000 to 45,000.
3. 1,031 (86.1 per cent) have populations of 45,000 or more.

LOCAL HEALTH PERSONNEL AND SERVICE COSTS

U.S.A.

	Present	Proposed
Full-time Medical Health Officer....	2,269	2,060
Part-time clinicians.....	4,655	6,140
Public Health Nurses.....	13,740	26,380
Sanitary Engineers (Public Health)	300	1,325
Sanitarians	4,691	3,900
Clerks	4,596	8,446
Expense (total)	\$77,262,600*	\$127,391,300*
Per capita	61c	97c

*Of which 21 per cent are other than salaries.

LOCAL HEALTH PERSONNEL AND SERVICE COSTS

MINNESOTA

	Present	Suggested
Administrative Medical Officers full-time.....	26	22
Part-time Health Officers.....	1,626	11
Part-time Clinicians.....	65	89
Public Health Nurses.....	251	562
Engineers	9	12
Sanitarians	52	98
Clerical Workers	81	185
Laboratory workers	15	76
Veterinarians	4	10
Dentists	9 full time 6 part time	76 11
Dental Hygienists	2	68
Health Educators	2	10
Cost		
Salaries	\$979,400	\$1,810,800
Other	187,800	442,800
Total	\$1,167,200	\$2,253,600
Per capita	42c	81c

Of the 1,197 units there are 318 of a single county each, 821 multi-county units, thirty-six including parts of more than one county, twenty-two city units including the District of Columbia, and a unit of three cities. Having reached this provisional agreement as to the number and boundaries of desirable and apparently practicable units of local health jurisdiction the following facts were assembled from official documents for each unit and by states.

1. Square mileage.
2. Population and density per square mile.
3. Spendable income per capita and in many instances property valuation or assessment per capita.
4. Number of general hospital beds and beds per 1,000 of population.
5. Number of practicing physicians (pre-Pearl Harbor) and ratio of persons per physician.

Further information was then obtained as to the personnel now employed in each of the proposed units in local health work, and the expenditures for salaries and nonsalary costs, total and per capita for all local health services in each unit area. Finally the committee prepared for each unit a table of the desirable personnel to provide

a good basic public health service in each suggested unit, including the salary and other costs for the operation of the local health department. In all but a few instances the recommended expense was kept within the one dollar per capita.

A few of the parallel figures for personnel and costs for present and proposed local health services are given here for continental United States, and for Minnesota.

It is suggested that the eighty-seven counties of Minnesota be served by ten multi-county units of populations 71,300 to 591,300, of areas 1,024 to 16,940 square miles, with spendable per capita income of \$382 to \$891, of assessed valuation per capita \$204 to \$1,135, with general hospital bed ratios to a 1,000 population of 2.3 to 6.7, with ratio of population to practicing physicians of 1,698 to 407.

In Minnesota the smallest county has 3,000 population; only five of the counties have more than 50,000 population. There are 2,714 units of local civil government in Minnesota authorized to establish their own health organizations. Of these 1,638 had 1942 health officers mostly on part-time or fee basis and some of them nonmedical. Of the 1,881 townships only 821 had a health officer.

Until there is sound basic local health service for each unit of population and each square mile of area of our nation, neither state health service nor good federal health functions can be well performed. Without local interest in, and responsibility for, local health servants, services and support through tax funds, the best that the medical and associated personnel of health departments are capable of, will not be achieved.

ADDITIONAL DATA ON PENICILLIN ADMINISTRATION

WM. R. BAGLEY, M.D.

Duluth, Minnesota

Since writing the article, "Administration of Penicillin by the Knee Joint Method," which appeared in the March number of MINNESOTA MEDICINE, we have had enough corroboratory experience from fellow physicians to warrant the use of the knee injection method. We use normal saline solution in place of sterile water to dissolve the penicillin, every c.c. containing 10,000 units. The high potency, less volume and distention, relatively painless administration, using an ordinary hypodermic needle usually without preliminary novocaine anesthesia, makes this a very practical method of administration, especially outside of the hospital.

The knee is slightly flexed and relaxed. The fingers of the left hand press out from the inner edge of the patella. The center of the lower edge of the shelving projection of the patella is the mark for entrance into the synovial bursa underneath. An inch-long hypodermic needle will pass through 99 per cent of the synovial sacs at this point.

Infections of the extremities which we have treated with hot compresses and sulfa derivatives, we now treat with 10,000 units per c.c. penicillin, injecting 10,000 to 100,000 units distal to and in line with the lymphatics and return circulation. The infected area is subjected

to a concentrated shower of penicillin such as no general body distribution can give, and many times if used before actual necrosis of tissue will prevent abscess formation.

The very light lemon-yellow solution, penicillin in saline solution, 10,000 units per c.c., causes very little tissue irritation. We have used 20,000 units in a finger; 40,000 units in a six-year-old child's forearm; 100,000 units in a leg where the thigh had been lacerated by a boar hog bite. Tetanus serum and knee injections of penicillin were also used in this case.

The determination of the type of infection is not practical in many of these cases but I am very sure the motto, "Use Penicillin First," is safe, and many times the curative results, if large enough doses are used, are almost miraculous. With the purer, very light colored penicillin preparation which a number of our reliable pharmaceutical houses are putting out, the reactions in the tissue are absent or very mild. I believe that when there is any discomfort it is largely due to volume and too rapid infiltration. The concentration of 10,000 units per c.c. of normal saline permits the use of large and effective dosage.

CLINICAL-PATHOLOGICAL CONFERENCE

MALIGNANT MENINGOCOCCIC INFECTION

Waterhouse-Friderichsen Syndrome

Report of Two Cases

KANO IKEDA, M.D., and ROBERT ROSENTHAL, M.D.

Saint Paul, Minnesota

DR. ROBERT ROSENTHAL: Last winter, Saint Paul was threatened with an outbreak of malignant meningococcic infection. Two fulminating cases occurring in cousins within twenty-four hours and terminating fatally after a duration of only twenty-two and ten hours, respectively, aroused the community. This type of meningococcic infection is uncommon, and an early diagnosis not always easy. As these two cases showed some very interesting features, and both came to autopsy, it seems worth while to report them. It is also interesting to report that a promptly carried out quarantine and prophylactic treatment with sulfonamides, of practically all children exposed, seemed to have prevented any spread of the disease among about forty contacts belonging to fifteen families, who participated at a birthday party given for Case 1 a few days before.

Case Report

DR. G. C. WILCOX: Case 1 was that of a boy, aged six, who became restless and whose temperature suddenly went up to 105.6 per rectum at 1 a.m. The mother gave the child elixir of pyramidon and bathed him, but the temperature remained 105.3. He was seen by the physician at 5:30 a.m. At 8 a.m., the boy was given aspirin and pyramidon. About 12:30 p.m., the child was perspiring freely. His temperature was 101. About this time, purplish spots began to appear at the mouth which spread rapidly over the face and extremities. These spots fused together and formed purpuric patches in areas. He showed no neurologic symptoms. He was admitted to the hospital at 5 p.m.

On physical examination, the boy was fairly well developed and nourished. He did not appear acutely ill but the outstanding feature was the purplish-red color of the skin over the face, arms, and legs. The mucous membrane of the cheeks, gums, and palate was injected and showed purple, blue spots. There was no rigidity of the neck. The heart rate was 90 per minute; there were no murmurs. The lungs were clear to percussion and auscultation. He coughed occasionally. The abdomen was flat. The liver was palpable one finger below the costal margin. The spleen was not palpable. There was no tenderness. The back was negative. The extremities were negative except for the purpuric spots. The reflexes were sluggish. The skin over the face, neck,



Fig. 1. Case 1. Appearance at autopsy. Note dark purpuric areas over the face, somewhat symmetrically distributed; dusky, mottled skin of the chest and shoulder.

arms, and legs was covered with purplish-red patches which were confluent in areas. There were many dark petechiae on the extremities. The back, chest, abdomen, and genitalia were fairly free from these skin eruptions (Fig. 1). The clinical impression at this time was purpura due to some severe toxic condition, probably some infection associated with thrombocytopenia; toxemia due to some drugs; or a beginning meningococcic meningitis. At 10 p.m., the patient became very dyspneic. The lungs were clear, and the heart sounds were faint but clear. The pulse was 160 and the respiration 60. The nail beds were cyanotic. The patient was mentally clear. Oxygen and carbon dioxide were given. The patient expired suddenly at 10:45 p.m., twenty-two hours after the onset of the symptoms. No blood pressure was recorded.

From the Chas. T. Miller Hospital and Children's Hospital, Saint Paul, Minnesota. Kano Ikeda, M.D., Pathologist, and Robert Rosenthal, M.D., Pediatrician.

CLINICAL-PATHOLOGICAL CONFERENCE

Autopsy

DR. KANO IKEDA: The body was well developed and well nourished. There was no edema or jaundice. The conjunctivae were injected. The nail beds were deeply cyanotic. The entire skin surface of the body was cyanotic.

The blood culture was negative.

Microscopically, too, the most striking picture was generalized vascular engorgement of all the organs, notably the skin (Fig. 3), the lungs, the larynx, the brain,

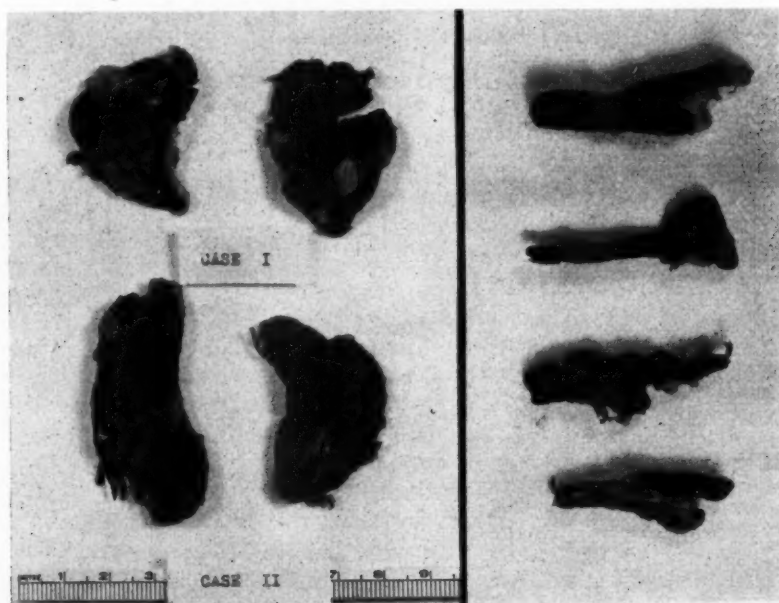


Fig. 2. Adrenal glands, Case 1 and Case 2. Note diffuse, massive hemorrhages throughout the organs, except a middle portion of the left adrenal of Case 2.

notic red in color with spreading areas of deeper purplish discoloration scattered over both upper and lower extremities and over the face and to a lesser extent over the trunk (Fig. 1). The distribution of the purpuric areas was somewhat symmetrical on both sides of the body.

The purpuric appearance of the skin immediately recalled to me the cases of malignant, purpuric (black) smallpox I saw and autopsied back in 1924-25 at Minneapolis General Hospital. I also thought of some other fulminating toxic or infectious disease. The gross autopsy findings were not remarkable except the adrenal glands which were both diffusely hemorrhagic (Fig. 2). Other changes were hemorrhagic spots on the serosal linings of the pleurae and peritoneum and in the lungs, cloudiness of all the visceral organs, and a congenital cystic pancreas which was incidental. The larynx was swollen and inflamed. The brain was swollen and enlarged, and the capillaries in the white matter were prominent. No exudate was recognized on the meninges. The nasal accessory sinuses and the mastoids were negative. The spinal fluid was very slightly turbid and its cell count was 120 per cu. mm. with predominance of polymorphonuclears. The smear of the sediment re-

vealed a few gram-negative diplococci identified as meningococci. The blood culture was negative.

Microscopically, too, the most striking picture was generalized vascular engorgement of all the organs, notably the skin (Fig. 3), the lungs, the larynx, the brain,

and the kidneys. Both adrenal glands showed diffuse extravasation throughout the cortex and medulla to the extent that all the parenchymal cells were buried in the flood of blood (Fig. 4). The skin showed marked dilatation and engorgement of all the capillaries and areas of extravasation throughout the derma. The mucosa of the larynx showed a similar picture (Fig. 5). The tracheobronchial lymph nodes showed a marked degree of edema and widening of the sinusoids which contained many wandering neutrophils, monocytes, and eosinophiles. The leptomeninges was edematous and congested and infiltrated by a few polymorphs, which also crowded along the perivascular spaces of the brain, indicating a beginning of a meningitis. Another striking thing was the appearance of the myocardium which failed to take even staining due undoubtedly to degenerative changes of the cells. One focal collection of polymorphs was recognized which might lead one to suspect a focal myocarditis (Fig. 6).

Of interest was the spinal fluid chlorides which was 590 mgm. against the normal of 750 mgm. The pericardial fluid chlorides was 466 mgm. which was also somewhat lower than the normal value. These lowered values of chlorides may be taken as an index of adrenal insufficiency.

CLINICAL-PATHOLOGICAL CONFERENCE

Case Report

DR. ROSENTHAL: The second case was that of a boy, two years of age, who was admitted to the hospital at 8:50 a.m., even as the autopsy was being performed on

became cloudy. The temperature rose to 105.5. Seven and a half hours after the onset of the illness, purpuric spots began to appear on the trunk. On admission to the hospital, the patient was purpuric over the entire body. He was cyanotic, dyspneic, and comatose. The

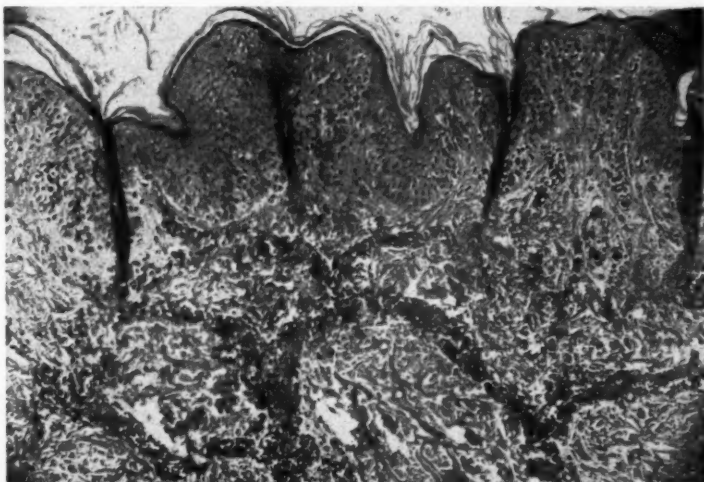


Fig. 3. (above) Microscopic view of the skin, showing engorged, anastomosing capillaries of the derma.



Fig. 4. (below) Microscopic view of the adrenal glands showing a diffuse extravasation and few crowded cords of cortical cells.

the first case. He became acutely ill soon after midnight. He vomited several times and his temperature rose to 104. He was restless in spite of sedatives. There was a marked tachycardia, and the respirations became quite rapid. He became critically ill. The respirations, at times, took on a gasping character; the pulse varied between tachycardia and bradycardia and at times was barely perceptible. The pupils reacted poorly at times. There was occasional slight jerking, and the sensorium

stools were loose and mucus streaked. A spinal puncture showed considerable pressure but a clear fluid which contained two cells. He was given 35 c.c. of 0.5 per cent sodium sulfathiazole solution intravenously, calcium gluconate intramuscularly, and sodium phenobarbital subcutaneously. The cyanosis became more intense and the number of purpuric spots increased. He expired under the picture of circulatory failure ten hours after the onset of the illness.

CLINICAL-PATHOLOGICAL CONFERENCE

Autopsy

DR. IKEDA: The entire skin surface showed light purplish-red discolorations with small purpuric spots scattered on the trunk and over the extremities. The visceral organs were cloudy but not remarkable. The

Microscopically, there was no evidence of meningitis. The adrenals were diffusely hemorrhagic. The skin showed engorgement of all the capillaries of the derma. Other visceral organs were congested as in Case 1, but to a lesser degree.

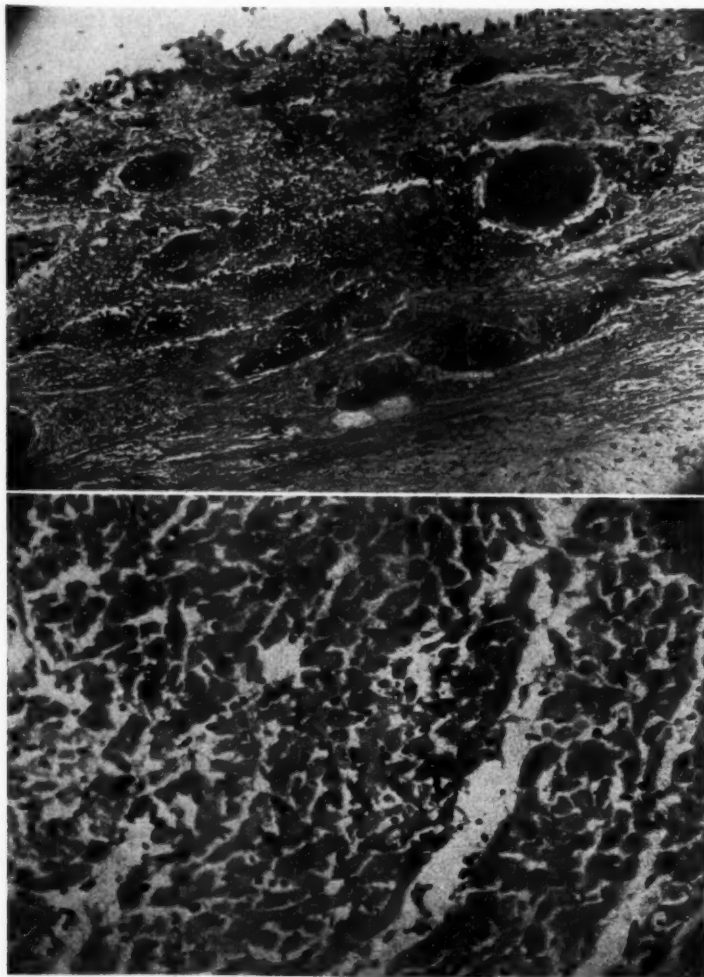


Fig. 5. (above) The mucosa of the larynx showing engorgement of the capillaries and extravasation throughout the corium.

Fig. 6. (below) The myocardium showing uneven staining due to degeneration and an area of focal collection of leukocytes, indicating a focal myocarditis.

right adrenal gland was completely hemorrhagic while 75 per cent of the left was hemorrhagic (Fig. 2). The larynx was edematous and congested. The brain was edematous and congested but showed no gross evidence of meningitis. The nasal accessory sinuses were clear, as were the mastoids. The spinal fluid was clear and showed no organism on direct smear but staphylococci on culture, which was interpreted as due to contamination. The blood culture grew meningococci.

To recapitulate the findings in these two cases: Both belonged to that rare group of fulminant meningococcic septicemia in which the purpuric eruptions of the skin and the hemorrhagic adrenals were the most prominent features. The presence of the latter with tendency to circulatory collapse has been known as the Waterhouse-Friderichsen syndrome. In the first case, the spinal fluid contained meningococci and the meninges showed early inflammatory changes, but the blood culture was nega-

tive, while in the second case, which was of only ten hours' duration, only the blood culture was positive for the causative organism. The meninges had apparently been yet uninvaded. A positive culture of the spinal fluid in Case 2 for staphylococci was disregarded as due to contamination. An attempt to demonstrate the organisms in the hemorrhagic areas of the skin was made. A few coccus-like bodies were seen which might be identified as meningococci. The exact route of infection was not determined in either case, though both showed the evidence of acute laryngitis.

Discussion

DR. ROSENTHAL: Case 2 definitely belongs to the so-called fulminating type while Case 1 may belong to the same type or to the septicemic type. In both groups, the meningitic symptoms may be very slight or almost absent, and the same is true of the spinal fluid findings. The onset is sudden with headaches and delirium soon followed by signs of circulatory collapse and coma. Petechiae and purpura are frequently a prominent manifestation, especially in the septicemic type. The temperature may show wide variations. The duration is very short, usually reported to be twelve to twenty-four hours. In certain epidemics, the incidence of fulminating cases is particularly high. The Waterhouse-Friderichsen syndrome usually accompanies these malignant cases, with massive hemorrhage into the suprarenal glands; but it is not pathognomonic for meningococcemia as it has been described in other profound infections.

DR. IKEDA: A clinical syndrome exemplified in these two cases: namely, a sudden onset of symptoms of a severe infection accompanied by cyanosis, purpuric eruptions, circulatory collapse, stupor, and early death, in which the most striking finding at autopsy is the bilateral massive adrenal hemorrhage, aptly called "adrenal apoplexy," has since 1918 been known as the Waterhouse-Friderichsen syndrome. This comparatively rare clinical syndrome is usually associated with acute fulminating meningococcal infection and has, sometimes, been used synonymously with it. However, as Karsner stated in his textbook¹, "the condition is apparently due to fulminant bacterial infections; hemolytic streptococci, pneumococci, influenza bacilli, meningococci, and others have been recovered from different cases." I may say here that in spite of this statement of Karsner's, which is generally accepted, it is of interest to recall that in the several autopsies I performed back in 1925 on individuals who died of malignant smallpox, known as purpuric or black smallpox, which behaved exactly like these two cases and in which the hemolytic streptococcal septicemia was the usual co-infection, in no instance did I find hemorrhagic adrenals. According to Martland², only 107 cases of this syndrome had been recorded in the literature up to 1943, and about 90 per cent of these had been in infants and children under nine years of age. Yet he states that he and his associates, as medical examiners, had for many years recognized this disease complex as a cause of sudden, unexplained deaths in adults as well as in infants and leaves the impression that the condition is not as uncommon as generally

thought to be. He found nineteen cases in over 10,000 autopsies during the last thirteen years, ten in infants and children, the majority under five years of age, and nine in adults. These were all cases of fulminating meningococcal septicemia. He seems to disagree with Karsner and states that he had "never found bilateral massive hemorrhages in the adrenal glands in any of these infections (streptococcal, staphylococcal, pneumococcal and other bacterial infections) or in any condition other than fulminating meningococcemia." Martland is so positive of his conviction in this regard that, when he observes these gross changes at autopsy in cases of sudden and suspicious death, without evidence of trauma or vitamin deficiency, he would unhesitatingly make positive diagnoses of "fulminating meningococcal septicemia sine meningitis" without waiting for bacteriologic confirmation. In his opinion, the hemorrhages seen in the adrenal glands in other severe infections are not massive and bilateral, but focal and often unilateral. I am personally inclined to accept his conclusions, having myself never seen the bilateral adrenal hemorrhages of such massive proportions in a large number of septic cases autopsied, including the cases of fulminating purpuric smallpox already cited. Lindsay, Rice, Sellinger and Rubin³ reported that two out of the seven cases showing the Waterhouse-Friderichsen syndrome with bilateral adrenal hemorrhages had an influenzal meningitis. Kunstader⁴ estimated about 65 to 70 per cent of the reported cases are due to meningococcal infection. That one must be cautious in accepting certain bacteriologic reports where chances of contamination may not be entirely eliminated is illustrated in Case 2 of ours who was exposed to Case 1, and in whom meningococci were isolated from the blood, and whose spinal fluid was perfectly normal, yet, was reported to have given a positive growth for staphylococci. While I am positive that in this particular case the staphylococcus must have been a contaminant, one must also bear in mind the possibility of terminal invasion by a second pathogenic organism as in the cases of the purpuric smallpox in which hemolytic streptococci were invariably isolated from the blood as secondary invaders. Therefore, it may be justifiable to state that at least some cases of the Waterhouse-Friderichsen syndrome, in which the causative agents were reported to be other pathogenic bacteria than meningococci, may have, in reality, been a case of primary meningococcal infection in which a secondary invader has eclipsed the original offender—the meningococcus. Many observers are of the opinion that the massive adrenal hemorrhage brings about a circulatory collapse which leads to an early death of the patient. However, there are others⁵ who believe that the fatal outcome is directly the result of the sepsis and toxemia rather than the hypoadrenalism though the latter may be the most important deciding factor, and, for that reason, should be vigorously combated by adequate adrenal cortical replacement therapy. On the other hand, it must be remembered also that sepsis alone may not cause a fatal or even a serious clinical picture, as has been well demonstrated by Potter, Reid and Bronstein⁶ who reported eleven cases of meningococcemia with the characteristic skin eruption, and without men-

ingitis, all of whom recovered. The question of the exact role which the massive hemorrhage in the adrenal glands plays in the syndrome still remains to be explored and settled.

As to the treatment, aside from the usual supportive therapy, sulfadiazine in adequate dosage seems to be almost specific and of first importance. That penicillin may prove equally or even more satisfactory to combat the sepsis is confidently expected. Of equal importance would be to correct the possible associated adrenal insufficiency by administration of adrenal cortical extract, sodium chloride, et cetera.

DR. R. M. WATSON: What is the mechanism which causes the massive hemorrhages in the adrenal glands?

DR. IKEDA: The most plausible explanation given seems to be that there is a direct toxic effect of the bacteria (meningococci) on capillary endothelium, causing the increased permeability and even the rupture of the walls with resulting extravasation. The adrenal gland, like the skin, has extensive, delicate capillary beds which are in intimate contact with the parenchymal cells, which accounts for a greater degree of involvement. Bacterial emboli are also suspected to play a part in the process.

DR. J. P. DAHLSTET: Will you enumerate some of the more important conditions to be considered in the differential diagnosis?

DR. IKEDA: From the standpoint of a clinical pathologist, and in the face of an evident fulminating infection, I would think of purpura fulminans of scarlet fever, measles, smallpox, diphtheria, and other septicemia, Rocky Mountain spotted fever and typhus, acute leukemia or other hemorrhagic diatheses. Thrombocytopenic purpura, vitamin deficiency, drug poisoning, com-

plicated by infection may be considered. However, the clinical picture here is so striking and dramatic that once seen, the clinician is not likely to forget the experience. It is regrettable that because of the rapidly fatal course, it has not been possible to make any extensive laboratory studies in these cases which might enable us to furnish the characteristic laboratory findings in the Waterhouse-Friderichsen syndrome.

In conclusion, may I emphasize a few pertinent observations which make reporting of these two cases worth while. First of all, none of the other forty odd contacts, all younger children, developed the infection. This, I believe, was largely due to the prompt quarantine and administration of sulfadiazine to those exposed as a prophylactic measure. Secondly, these two cases illustrate the earlier phases of meningococcal infection which should no longer be considered a mere meningitis but rather as a septicemia with ultimate localization in the meninges, which begins as a pure bacteremia without the meningeal involvement as in Case 2. The virulence of the invading organism and the resistance of the victim seem to determine the subsequent clinical picture. Thirdly, an early administration of sulfonamide or penicillin in large doses in all cases manifesting a similar clinical syndrome seems justified, according to a number of reported recoveries.

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THE TUBERCULOUS PATIENT

The private physician determines the presence or absence of tuberculosis. He has the responsibility, not only of making a diagnosis and advising treatment when indicated, but also of convincing the patient to accept his advice. The physician should be meticulously careful that in an effort to spare the feelings of the patient he does not minimize the importance of the disease, both

to the individual and to his family and other associates. The patient should realize that he has tuberculosis and not a "shadow" or "spot" on his x-ray film, that continued observation is absolutely essential, and that if treatment is indicated it is imperative that he accept it. —ROBERTS DAVIES, M.D., Nopeming Sanatorium, Nopeming, Minnesota.

HISTORY OF MEDICINE IN MINNESOTA

HISTORY OF MEDICINE IN GOODHUE COUNTY

Biographical Dictionary

(Continued from April issue)

— **Brooks** practiced in Red Wing previous to 1857. His office was taken over when he left by Dr. Charles H. Connelly.

Otis J. Brown graduated from the Western Reserve University in 1872 and came to Red Wing in 1885. He was president of the Red Wing Literary Society and was interested in debating. He served as county physician and, in 1898, he left for Crookston. Later he practiced in St. Cloud.

William Brown enlisted from Goodhue County as a surgeon in the Civil War.

H. L. Brynildsen was born in Norway in 1850. He practiced medicine at Vasa, Goodhue County, from about 1877 on. He ran a drug store, also, and served as postmaster at various times. He died June 29, 1908.

— **Bude** is listed at Zumbrota in 1895.

C. W. Calenvan is listed as practicing in Kenyon in 1890 (Polk's Directory).

— **Carver** is reported as an early practitioner at Pine Island.

Ambrose L. Clum first made his appearance in Goodhue County about 1880 when he was lecturing and selling Clum's liver cathartic, a patent medicine which he manufactured himself. He tried his hand at many other things in his notorious career, among which were law, medicine, architecture and politics. In law, he failed to pass the bar examination but used his self-gained knowledge to start lawsuits against anyone, for anything, if he thought he could gain thereby. In architecture, he drew plans for several public buildings; but apparently secured no contracts. In politics, he was continually announcing himself as candidate for various offices, even for the state senate, though he was never elected. In medicine, he started by lecturing on physiology and anatomy, selling patent medicines, and running an establishment for electric, "pharmatic" and Turkish baths. In 1885 he graduated from an electric college for physicians in Indianapolis and also secured a diploma in obstetrics and "opathology." Returning to Red Wing, he started a sanitarium and added the initials, "A.M., M.D., LL.D.," to his name. He spent brief periods in Minneapolis, Montana and Chicago. Finally, in 1897, he established himself in Minneapolis as an "Australian specialist of wide experience, deep learning and high renown." Under the title, "Surgery is a Mockery to Science," he lectured of the wonderful remedies he had learned from a Hindoo physician and the many and marvelous cures he had performed in this and foreign lands. We leave him in 1899 as "the famous German Specialist."

H. L. Coan was in Goodhue County in 1876.

Alva T. Conley was born in New York in 1847. He graduated from the Iowa State University in 1874 and two years later came to Cannon Falls. He was president of the Goodhue County Medical Society and served as Cannon Falls health officer and as county physician. He was a prohibition-

ist and believed in state control of liquor. He had a wide reputation both as a man and as a physician.

Hiram E. Conley graduated from the Iowa State University in 1884 and established himself as a physician in 1886 in Cannon Falls.

Charles H. Connelly came to Red Wing in 1857 or a little earlier and practiced there until his death, in October, 1861.

W. L. Cradock was a homeopath who practiced in Pine Island in the eighties and served as county physician in 1889.

C. W. Crary graduated from the Jefferson Medical College in 1871. About 1875 he went to Lake City and, later, came to Goodhue County. In 1885 he moved to Wisconsin and thence to Chicago.

J. E. Crewe graduated from the University of Minnesota Medical School in 1896 and established himself in Zumbrota in 1897. In 1899 he was appointed examining surgeon for the Zumbrota militia. In 1902 he moved to Rochester. (See Olmsted, Houston, Fillmore, Dodge County Histories.)

C. E. Daniels practiced in Goodhue County toward the end of the seventies.

Brainard Dearborn graduated from Bowdoin in 1867. In 1890 he opened an office in Red Wing. He studied in Europe in 1891 and six years later located in Wakefield, Nebraska.

Charles Delaine is first mentioned in connection with a malpractice suit in 1878 in Red Wing. He died about 1880 of alcoholism.

L. W. Denton came to Pine Island in June, 1878.

F. W. Dimmitt was born in Cambridge, Illinois, in 1859. He attended the University of Missouri and graduated with high honors from the Rush Medical College in 1881. He practiced in Illinois for twelve years and came to Red Wing in 1893, having spent the previous year in a private hospital. He served on the Red Wing Board of Health and as president of the Goodhue County Medical Society. Dr. Dimmitt left Red Wing for Wisconsin after 1900 and later moved to Texas.

A. C. Dockstader practiced in Red Wing in 1884. (See Dakota County History.)

John Emmet was born in Norway, graduated from Iowa State University and came to Red Wing in 1883.

— **Freeman** lived in Pine Island but moved to Red Wing about 1874.

Charles M. Frye practiced in Zumbrota. He graduated from Ann Arbor University in 1883.

R. Frettheim graduated from the King Frederick University, Norway, in 1882 and came to Cannon Falls about 1889 or 1890. He died in 1899 of hemorrhage of the lungs, having had several previous attacks. At the time of his death he was about forty-eight years old and known as an eccentric. He was unmarried and had few friends, but those he had were warmly attached to him.

Lewis H. Garrard was born in Cincinnati in 1829. He first visited Minnesota in 1854. Later, after a two years' tour of Europe, he established himself on a 5,000-acre farm at Frontenac where he introduced and bred Devon cattle and Southern sheep. He was one of the first in Minnesota to cultivate orchard grass and he was noted for the fine fruit he raised. In 1857 he was elected a county supervisor. In 1859 he was elected to the state legislature. During the war he enlisted in the Seventh Minnesota regiment and he was active in local Republican politics. In 1870 he moved to Lake City and was elected mayor in 1876. Later he was again elected to the legislature.

HISTORY OF MEDICINE IN MINNESOTA

He died at the age of fifty-eight in New York of a paralysis which followed a short illness.

J. A. Gates practiced at Kenyon, Goodhue County. In 1905, as a member of the state legislature, he was instrumental in blocking measures prepared in the interests of quacks. It was due largely to his efforts, also, that Goodhue County undertook establishment of the tuberculosis sanitarium which later became Mineral Springs Sanitarium. He served as captain in the United States Army Medical Corps in World War I.

C. P. Gibson graduated from the Chicago Medical College in 1873 and located in Goodhue about the beginning of the eighties.

— **Glidden** is listed at Pine Island in 1882.

Ole Gloppestad received his medical degree in 1887 from Rush Medical College and lived at Skyberg, Goodhue County.

— **Gould** is listed at Zumbrota in 1876.

D. W. Graves practiced at Kenyon from 1870 to 1880.

William Greaves graduated from the University of Michigan in 1870 and located in Cannon Falls the next year. He later ran a drug store in Kenyon.

G. W. Green settled in Goodhue County in 1873. (See Wabasha County History.)

Just Christian Gronvold lived and practiced medicine at his home in Wanamingo near Norway, Goodhue County, for many years and was known as one of the outstanding men in his profession. He was born at Fron, Norway, in 1833, and graduated from the University of Christiania in 1851. The next year, at the age of nineteen, he passed the "examen philosophicum" and began the study of mathematics and natural sciences. He spent several years as a teacher of mathematics at Sylom's Polytechnical school in Christiania and also spent several years surveying and drawing maps. He served as an assistant engineer in a railroad survey during these years and he was a reserve lieutenant in the Norwegian army. He came to the United States in 1865, intending to enter the army here. Instead he attended the Humboldt Medical College in St. Louis, graduated with high honors the following year, and came to settle in Minnesota (1867). He was a member of the Goodhue County Medical Society (1870) and the State Medical Association (1871). Beginning in 1876 he served for twelve years on the State Board of Health. He also served as county physician. He was one of the foremost authorities on leprosy in the country and reported the first known case of Elephantiasis Graecorum recorded in Minnesota. He was the author of "Leprosy in Minnesota" (a report first published in *Public Health*, Red Wing, Minnesota, in 1886-7, II 89-91). He was interested in Scandinavian folk songs and melodies and was one of the organizers of the Norway Singing Society. He died in 1895 of the combined effects of pneumonia and heart disease. Goodhue County lost a public-spirited citizen of intelligence, independence and indefatigable energy. His many friends shared in expressing the esteem they held for him by the erection of a memorial over his grave. His death was followed, two months later, by the death of his wife, whom he had married in 1874. They were survived by seven children.

K. E. Gryttenholm began the practice of medicine in Zumbrota about 1894. In 1897 he attended the International Medical Congress in Russia.

Orrin I. Hall, a brother of O. H. Hall, was born in Wales, N. Y., in 1843. He graduated from the University of Buffalo in 1873 and opened his practice

in Zumbrota in 1874. He served as county physician. His death occurred in June, 1908.

Oscar H. Hall practiced medicine in Zumbrota, Goodhue County, from 1868, when he graduated from the University of Buffalo Medical School, until 1901, when he moved to Minneapolis. He was a charter member of the Goodhue County Medical Society, a member of the Minnesota Homeopathic Association, and he became a member of the State Medical Association in 1871. He served as county physician and for a while in the seventies he ran a drug store. Toward the end of the nineties he moved to St. Paul. In 1899 he was elected president of the St. Paul Homeopathic Society of Medicine and Surgery. He was born in New York state in 1842 and died in Minneapolis in 1913.

T. E. Hall graduated from Rush Medical College in 1875 and practiced at Frontenac.

W. N. Hambliton, a homeopath, came to Red Wing in 1878 from Chicago.

J. W. Hancock first practiced in Goodhue County in the seventies. In 1871 he became a member of the State Medical Association. Later he moved to Ellsworth, Wisconsin.

Ed. S. Hart shared an office with Bruno Jaehnig in Red Wing in 1883 and was in that year elected to the Goodhue County Medical Society. The next year he left to take the post of surgeon at the Standing Rock Agency in Dakota. Thence he went to Fort Yates, Dakota, and to Minneapolis.

K. A. Haslerud graduated from Christiania University, Norway, and spent part of 1883 in Red Wing.

A. B. Hawley practiced in Red Wing. He was born in New York state in 1833. He studied medicine with his uncle, Dr. Joel E. Hawley, of Ithaca, New York, graduated from Geneva Medical College in 1854 and spent two years abroad, studying in Edinburgh, Paris, London and Dublin. The first issue of the *Red Wing Republican*, September, 1857, contains his business card. After the Civil War he was a partner in the Clark and Hawley Drug Store, one of the first of the city, and later he took over entire charge of the store. He was a charter member of the Red Wing Christ Church (1869), a charter member of the Goodhue County Medical Society (1869) and was active in the reorganization of the Minnesota State Medical Association which took place the same year. He was an able physician, a good citizen, popular and genial, and, in politics, Republican. He was interested in geology and had built up a collection of fossils. He died in September, 1878.

A. W. Hewitt was born in New York in 1826 and entered the practice of medicine in Bradford, New York, after studying under several practitioners there. Later he moved to Ripon, Wisconsin, and remained there until 1867, when he went to Kenyon. He ceased to devote all of his time to medicine after the first few years in Kenyon and died there in the early '90's.

Charles N. Hewitt was one of the outstanding physicians of Minnesota and was known throughout the country for his work in public health. William Watts Folwell, who knew him at college and who served in the same regiment with him during the Civil War, speaks highly of him in his *History of Minnesota*. Under the chapter headed "A Minnesota Doctor," Dr. Hewitt is also included in C. L. Slattery's *Certain American Faces*. Charles Hewitt was born in 1835 and graduated from the Albany Medical College in 1857.

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After the conclusion of the Civil War, in which he served with the rank of major, he came to Red Wing (1867) where his professional card announced him as an examining physician for pensions. He was one of the charter members of the Goodhue County Medical Society and its president in 1872. He was also a charter member of the Minnesota State Medical Association when it was reorganized (1869), and served as its president in 1882. Beginning in 1873 he lectured to senior classes at the University of Minnesota on hygiene. Later he lectured in the medical school; and finally, in 1891, he took charge of the department of bacteriology. He was much interested in the welfare of his own town and he was one of the founders of the Red Wing Natural History Society (1884). He was elected a member of the Minnesota Commandery of the Military Order of the Loyal Legion.

In 1872 Dr. Hewitt became permanent secretary of the Minnesota State Board of Health. As such, he organized local health boards throughout the state, supervised the inspection of schools, public buildings, ventilation systems and sanitation, and used his influence in securing safe water systems for various towns. He did much lecturing and writing, urging that the newspapers be used for health information. He was especially influential in encouraging vaccination for smallpox in the state and in 1891 he established, on a farm near Red Wing, the first vaccine station in Minnesota. He was one of the promoters and contributors to *Public Health*, a magazine published by the State Board of Health. He held his position as secretary until 1897. At that time, Governor Clough failed to reappoint him and he was succeeded by Dr. H. M. Bracken of Minneapolis. Reasons given at the time for the governor's action were that the board had been enlarged in order to include men from the medical faculty of the University of Minnesota and that Hewitt, being an independent professor at the university, and something of an autocrat, had aroused their antagonism. They thought a younger man would be of more service.

Charles Hewitt was an honorary member of the New York State Medical Association and in 1888 he became the president of the American Public Health Association. In 1890 he went to France where he spent about a year studying at the Pasteur Institute. He did research work on diphtheria and rabies, there, and visited the famous Granneville sewage plant. He went to Munich and then to London where he had been invited to deliver an address before the International Medical Congress. He was made a member of the Hygiene Society of France and, in 1895, received the honorary degree of LL.D. from Geneva College, New York, for his public health work. He died in 1910 and his extensive library was presented by Mrs. Hewitt to the Goodhue County Medical Society. Later the library was put under the care of Dr. W. J. Mayo, who had long been a close friend of Dr. Hewitt. It is now maintained as the Charles N. Hewitt Library in the Mayo Clinic at Rochester.

A. E. Higbee, a homeopathic physician, opened his practice in Red Wing and Minnesota in May, 1870. Five years later he moved to Saint Paul to form again a joint practice with his brother, C. G. Higbee.

C. G. Higbee was born in New York in 1835. He had a successful practice as the first homeopathic physician in Red Wing, having settled there about the year 1860. He was a captain in the union army during the war and in 1871 moved to Saint Paul.

Charles Hill was born in Gallatin County, Illinois, in 1826, went to McKendall College in 1850 and studied medicine at Ann Arbor, Michigan, and

at Nashville, Tennessee, in 1854, 1855 and 1856. After one year's hospital experience in Chicago he graduated from Rush Medical College in 1857, and settled in that year in Roscoe, Goodhue County. In 1859 he moved to Pine Island and is credited with being the first physician to establish himself in practice there. He was elected president of the town council when the village was incorporated in 1878. He was elected to the State Senate in 1869 and became president of the Goodhue County Medical Society at its reorganization in 1902. He was one of the most beloved of the early pioneers and was a familiar figure about the town in his high silk hat and cutaway coat until his death in 1914. It is interesting to note that his son, Frank D. Hill, was a linguist of ability and served as consul to cities in Paraguay, Uruguay, Venezuela, Brazil, The Netherlands, Spain, Russia and Germany. At the time of his accidental death in 1912, he was consul to Frankfort, Germany.

Fred Hoff settled in Goodhue County in 1878.

Seth E. Howard came to Goodhue in 1893 from Rochester and stayed for two years before moving to Minneapolis.

F. F. Hoyt first came to Red Wing in 1856. He became a partner of W. W. Sweney and was esteemed highly in his profession. He took an important part in civic life, being a member of the first city council of Red Wing. He was a charter member of the Goodhue County Medical Society and became a member of the Minnesota State Medical Association in 1871. He died in May, 1880, at the asylum for the insane in St. Peter, Minn.

Christian Hveem was born in 1835 in Norway. He received his medical degree from an eclectic school in 1878 and practiced in Hader, Goodhue County.

J. L. Irwin settled in Goodhue County in 1880.

Bruno Jaehnig, one of the important physicians of Red Wing, was born in Saxony in 1841. He graduated from the University of Michigan in 1865 and came to Red Wing in 1869. In 1870 he became affiliated with the Goodhue County Medical Society, serving as its president in 1883. He served as a county physician and as city health officer for many years. He was the first superintendent of the county hospital and was physician to the State Training School. Toward the end of the seventies he was a partner in the Jaehnig and Teele Drug Store and was also an agent for the Mathushek pianos. For many years he was director of the Minnesota Scandinavian Relief Association. He was an active member of the local school board and maintained a life-long interest in music and ornithology. His death occurred in 1912.

Martin Johnson graduated from the Buffalo Medical College and located in Red Wing in 1890.

A. H. Jones started the City Drug and Book Store in Red Wing in 1861 and apparently practiced as a physician at the same time. He was a charter member of the Goodhue County Medical Society and its first treasurer. He served on the local school board and in 1884 was, for a while, a partner to Dr. Newhall.

Alva W. Jones was born in Chesterfield, Ohio, in 1863. He came to Red Wing in the '80's and there taught English and Mathematics at the Hauge Seminary for a short time. Later he attended the University of Minnesota for three years and eventually graduated in medicine from Georgetown University in Washington, D. C., in 1891. After two years of practice in Washington, Dr. Jones returned to Red Wing in 1894 and he has remained in active practice there ever since. In the course of his career he has served as health officer and president

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of the Board of Health, as president of the Board of Education and of the Goodhue County Medical Society. In early years he was a member of the United States Pension Board and he was, for twelve years, physician to the State Training School at Red Wing. Dr. Jones is a man of wide interests and attainments and a poet of marked ability.

Philo E. Jones, uncle of Alva W. Jones, attended the University of Michigan and studied medicine at the Medical College of Ohio (graduating in 1870), the Bellevue Medical Hospital, New York, and the Jefferson Medical College in Philadelphia. Before coming to Red Wing in 1878 or 1879 he had practiced for eleven years in Ohio. In 1884 he formed a partnership with Dr. Newhall and built and maintained a large practice for many years. He was a man of culture and industry, with business as well as professional ability. He moved to Salt Lake City in 1894 and later to Portland, Oregon. He died in Portland leaving two sons who are both well-known physicians, Noble W. Jones of Portland, and Edward W. Jones of Seattle.

N. Juell came to Red Wing in 1893 following a period of study in Germany. Previously he had practiced in Wisconsin and in other parts of Minnesota. He served on the pension board and in 1897 removed to Faribault to practice and to conduct a drug store.

F. Keller practiced in Red Wing 1874 to 1875. (See the Olmsted, Houston, Fillmore, Dodge County Histories).

John Kelly, one of the first physicians in Goodhue County, was born in New York in 1801. He later moved to Pennsylvania, thence to Ohio and to Michigan where he farmed until, in 1845, he began to practice medicine. In 1849 he went to California intending to give up his practice because of his health; but he returned to Michigan in a few years, and in 1853 he came to live on a farm in Florence, Goodhue County, Minnesota. He was a member of the Lake Pepin Valley Old Settlers Association. Apparently, he did not practice medicine after coming to Minnesota. He died at Central Point at the age of ninety-one.

John W. Koch, a graduate of the medical school of Frankfort, Germany, and also of the Hahnemann Medical College of Chicago (1868), located in Red Wing in 1868.

Hans J. E. Koren was a graduate of the King Frederick University, Norway (1869). He located in Red Wing about 1882 and was a member of the Goodhue County Medical Society (1883).

J. M. Knox, an oculist, came to Red Wing to practice in 1867.

B. F. La Rue graduated from Rush Medical College in 1870 and came to Red Wing the next year.

Herbert W. Lane is listed as practicing in Red Wing in 1890. (Polk's directory). He moved to Ellsworth, Wisconsin.

F. Laus took his medical degree at the Chicago Medical College in 1874 and settled in Goodhue County.

(To be continued in the June issue.)

President's Letter

COGITATIONS

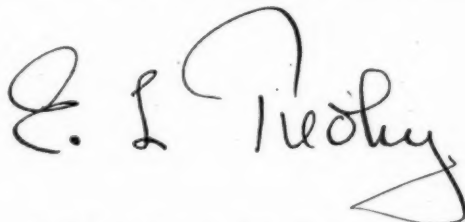
The courtesy was afforded me recently to visit one of the largest Army hospitals (the Percy Jones at Battle Creek, Michigan) and the medical division of the Great Lakes naval training station near Chicago. It is scarcely possible to sketch the immensity of medical military problems posed by this war. Both of these institutions show clearly the adaptability and motility of our profession. What laymen generally fail to understand is the price our profession pays to make possible "The saving of over 95 per cent of those wounded and brought alive to dressing stations." That dramatic, immediate life saving captures the imagination. It is not only newsworthy, but screenworthy. What is missed is the tedious, grinding detail of the reconstruction hospitals such as the Amputation Center at the Percy Jones; and the servicing and training of recruits (corpsmen, nurses, medical units), so much the field and duty of the Great Lakes station. It comprises a self-contained unit about the size of Duluth. Any such peacetime unit would gradually arrive at a fixed personnel. Not so with these gigantic military groups. Change and turnover is the essence of their existence. From that fact stems much of the need of the oppressive "book work" that appears to insulate the civilian doctor recruit from actual medical work.

For the recent medical intern that necessary affliction is a milestone in his life; it may greatly advance his training as all previous wars have done. But the price mounts for that age group (often well-established specialists; and their need to spark the various units and train younger men is absolute) from 35 to 55. It is not alone that these men have left remunerative practices, but more than that. They had arrived at high schedules of living costs. Most of these men have children entering the expensive stages of school and college; insurance policy premiums click around with the certainty of taxi meters; that house mortgage—the price of advancing the family into the golf club district. I need not further pursue this dolorous recital of sequences so familiar to everyone. The point is, that whereas the further postwar training of the former intern groups is a "must," these older men stand to suffer grievous dislocation; and the longer the war lasts, the more decisive this may become. Their restoration to their former status, where it is desired, is an ethical responsibility that each worthy medical society must automatically underwrite. Who else will be available to teach the oncoming groups? Many who have limped through to local indispensability via a lumbar fibromyositis or a flood of industrial contracts, might well be assigned exchange professorships in distant lands to do the medical policing of the postwar decades. The position would provide opportunities both for culture and safety.

Well, these are my own observations; the comments are not the result of any specific "beefing" that I heard. On quite a different wave length I catch from the ether that the public likes our individual output well enough, but our group pronouncements and verdicts are anathema. To begin with, all the Chicago newspapers on March 23, 1945, gave as much attention to Sister Kenny as to the war. Indeed she (as usual) was a part of it. She shares many qualities of humility, aggressiveness and powers of personal appraisal with Harold Ickes. She has read the life of Pasteur, but so far as I know, she has never appraised her faith against that of an Australian Shepherd. It may be even that in such open spaces the kindest of deeds would go unnoticed. Accordingly, their needs must flail violently to raise enough dust to be noticed.

Incidentally, infantile paralysis is the medical weather vane of emotional appeal. The public is blithely unaware of the miracles accomplished among our armed forces in controlling deadly transmissible disease. Meningococcic meningitis: this terrible disease has been treated in large numbers in all military camps and hospitals with almost uniform recovery and without complications. Great advances are here in controlling the complications of scarlet fever, and there is hope also for rheumatic fever. Medicine has earned the right to ask for a "Better Press."

The Medical Guild may be next in line for some of the traditional mass hate—a technique so often directed against the strong and well entrenched. It is regrettable that Sister Kenny lends herself to this medium. The acclaim she craves from the medical profession seems to be very dear to her.



President, Minnesota State Medical Association.

Editorial

CARL B. DRAKE, M.D., *Editor*; GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

GAS GANGRENE

A CASE of gas gangrene, recently observed in a civilian hospital stimulated the author to review the recent literature on the subject, particularly those reports emanating from the armed forces both of this country and Great Britain.

Gas gangrene may be caused by any one of several anaerobic organisms, the most common in the order of frequency being *Cl. welchii*, *Cl. septicum* and *Cl. edematiens*. These bacteria are abundant in the flora of the intestinal tracts of man and domestic animals so that in a high percentage of wounds contaminated by fertilized soil, it is possible to recover the organisms even in the absence of gross evidence of infection. MacLennan¹ of the British Army reported as high as 55 per cent positive cultures from wounds suffered during the North African campaign in spite of technical difficulties encountered in doing bacteriology in the field. A similar study of gangrenous areas about the feet of diabetic patients carried out by Mead and Manson² at the University of Minnesota resulted in almost 100 per cent positive cultures for gas bacillus.

This infection is fortunately not often seen in civilian practice but should always be kept in mind in puncture wounds or those with large amounts of devitalized tissue. Gas is formed in the tissue by the destruction of protein and from the fermentation of muscle sugar. The gas liberated is hydrogen. In this war, according to MacLennan, 7 per cent of all wounds develop gas gangrene. The incubation period varied from five hours to six days. The virulence of the infection, like that of tetanus, is usually directly proportional to the length of the incubation period. The clinical picture of gas bacillus infection is that of an overwhelming toxemia. The symptoms are usually out of proportion to the degree of injury. There is a rapid pulse, a relatively low temperature and often a picture of persistent shock not relieved by blood transfusions. A rapidly progressive anemia, more rapid and more severe than in almost any other infection, is a striking feature of the disease. The diagnosis should be made by

culture in patients having this picture before there is any evidence of gas in the tissues. Emphasis should be laid on the fact that the presence of gas in the tissues is a late and often fatal sign of gas bacillus infection. Cellulitis caused by anaerobic streptococci is the only condition which is apt to be mistaken for gas bacillus infection. It occurs as a rule in grossly contaminated wounds which have been neglected. The condition produces a picture of sepsis but the severe toxemia seen in gas gangrene is absent. Differential diagnosis is best made by culture. Unnecessary amputations have been done. Adequate incision and drainage in conjunction with sulfonamide therapy is usually adequate.

There is no specific treatment for gas gangrene and it is the consensus that all proved available agents should be used. The surgical treatment should include multiple incisions, complete debridement or amputation as the situation may indicate. Sulfonamides are a valuable adjunct to therapy and probably should always be used. Antiserum is biologically sound therapy and remains a valuable agent. The polyvalent serum is recommended for intravenous use in doses of 50,000 international units every six to eight hours. Three doses should be given. There is no proof that the topical use of antiserum has any value. Jeffrey and Thomson³ and Herrill⁴ are convinced that penicillin is a valuable drug given intramuscularly or by the continuous intravenous method in doses of 100,000 to 200,000 units in twenty-four hours. Keefer⁵ also includes gas bacillus infections as an indication for the use of penicillin. Some authorities feel that x-ray therapy in doses of 75 roentgens twice a day is of value. It is stressed that unless portable apparatus is available, moving the patient may do more harm than is gained by the treatment. Some use has also been made of local refrigeration but its value is still unproven. No dogmatic therapeutic regime can be laid down. The judicious use of a combination of these various agents is the best procedure at the present time. Supportive therapy in the form of transfusions and adequate fluid administration should also be used. Im-

provement is usually rapid in cases that react favorably.

Figures from the Surgeon General's Office show that in World War I the mortality rate in gas gangrene was 48.52 per cent. Available figures for the present war indicate a mortality of 30 to 40 per cent. It would seem therefore that the addition of sulfonamides and penicillin has definitely improved the prognosis in this disease.

ROSCOE E. DEAN, JR., M.D.

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BENEFITS FOR VETERANS

IT IS to be expected that the members of our armed forces will receive special consideration on their return to civilian life. Industry is confronted with the problem of proper compensation for both those returning to their former jobs and for new employees. Those who have taken their places, in many cases women, will have to be replaced by former employees. Those who have received much greater compensation while in service and who have acquired families will not be able to exist on their prewar salaries. After all, they have been serving American industry during their years in the armed services, and are entitled to a raise.

Servicemen who have been wounded and sick while in service should receive the very best medical attention in order that they may take their places in civilian life and become self-supporting citizens. Cripples will receive special consideration both in rehabilitation and financial compensation. The families of those killed in action should not receive miserly compensation. It would shock right-thinking citizens if they knew what small monthly checks widows of soldiers in previous wars are receiving today. We note that a bill to increase the monthly allowance of widows of those killed in action from \$50 to \$75 and a proportionate increase to their children has recently been introduced in the House of Representatives. It is not that sufficient funds were not handed out to veterans of previous

wars in the matter of bonuses, free hospital care for all veterans irrespective of service-connected disabilities and the like. Just consideration, however, has not been given those who actually suffered as a result of service to their country. A complete revision of the laws relating to this matter is in order.

Provision of hospital care for all veterans of World War I irrespective of any service connection of disabilities has always been protested by the medical profession. Extension of this service to veterans of World War II was to be expected, and has been put into effect. The facilities of the Veterans Bureau will be taxed to the utmost by the veterans of the present war, and hospital care should be restricted to war casualties.

It takes one's breath away to learn that the present Congress had been in session only a couple of days when a bonus bill for World War II veterans was introduced proposing bonus payments up to \$5,000, and involving a cost of forty to fifty billion dollars. Furthermore, more than 200 veterans' benefit bills were introduced in the first two months of this session, one of them being the proposal of a full year's pay on discharge. Another bill would give \$50 a month at the age of sixty to any World War I veteran who had engaged in a campaign or expedition in which a campaign medal was given prior to December 7, 1941.

It is to be hoped that Congress will be a little realistic in the matter of benefits to veterans. At a time when economists are concerned as to how taxes can be reduced to enable private industry to expand after the war to enable taxes to meet payments on our huge national debt and expanded governmental costs, an additional load of billions for bonuses and the like is simply out of the question.

There is little justification for any feeling that there has been profiteering during the present war. Wages in war industry have been plenty high, but taxes have taken their cut. Those with large incomes have found that taxes have reduced net incomes far below prewar times. This has been necessary and right. But any feeling on the part of those in service that they are in justice entitled to a cut in war profits in the form of bonuses is unjustified.

There is every evidence that we are about to terminate the war successfully as far as the defeat of the enemy is concerned. It would be trag-

ic if the members of the armed forces should be instrumental in so increasing taxes as to bankrupt the country.

CARBON TETRACHLORIDE

CARBON tetrachloride is a colorless fluid with an ethereal odor which is used extensively in industry because of its solvent action on gums, resin, and fats. It is the active ingredient of many cleaning fluids, and because it is non-inflammable is also used as a fire extinguisher. One well-known cleaning fluid is marketed as Carbona, and the fire extinguisher Pyrene consists of carbon tetrachloride. It has also been used as an anthelmintic in the treatment of hook-worm infection. In 1933 some thirty million pounds of carbon tetrachloride were manufactured. The amount was more than doubled in 1938.

The extremely toxic qualities of the substance have not been sufficiently emphasized. Containers of cleaning fluids, eleven different varieties of which, all containing carbon tetrachloride, were found for sale at one New York department store, as a rule emphasized the safety factor of the non-inflammable quality of the preparation, but warnings of the poisonous qualities of the preparation if present at all were in small type.

Carbon tetrachloride can exert its toxic action through inhalation of the fumes, and in confined spaces with poor ventilation can cause serious and even fatal poisoning in a comparatively short period of time. If ingested, very small doses have proven fatal. Of the reported fatalities in one series collected in 1935, half were due to its use as an anthelmintic. Children have died from as small doses as 0.3 to 1.0 c.c. taken internally. Adults with reduced calcium in their systems or alcoholics have poor resistance to carbon tetrachloride.

The substance exerts its toxic action on the liver, kidneys, heart, and adrenals. These organs show necrosis and fatty degeneration. The chlorine of the C Cl_4 molecule is converted to HCl in the body and the poison resembles that of phosgene.

Gennebra in 1939 collected 141 reported cases of poisoning from carbon tetrachloride with thirty-nine fatalities. Many certainly have not been reported. Proper precautions are probably taken by industry, or there would be more cases

of poisoning. Most physicians never see a case, but some mild cases are doubtless overlooked.

There is no governmental regulation of the sale of carbon tetrachloride. Its widespread use indicates its commercial value. However, the danger of poisoning from the fumes or ingestion of preparations containing the substance should receive more emphasis on labels and sales of cleaning fluids for household use should be limited to a pint.

NAVY DOCTORS—AND THE TYPES OF DUTIES TO WHICH THEY ARE ASSIGNED

"What types of duties are Naval medical officers assigned to?" . . . "What kind of assignment will I receive?" . . . "Will I be used in my specialty?"

Such are typical of the questions being asked every day by doctors who are considering the U. S. Navy as their next call . . . who want to assist at this crucial hour when more and more fighting men are requiring medical and surgical attention. And, of course, these questions are very, very important questions, for in their answers is wrapped up the doctor's concern in utilizing constantly all of his talents and skills and in keeping up with all of the developments and innovations in the field of medicine.

Now for the first time a categorical description of the principal duties of medical officers in the U. S. Navy has been prepared. Although the Navy cannot promise a candidate his exact preference for duty, it makes every effort to place him where he can work most effectively. This applies particularly to doctors who have had special training, for the value of placing specialists on duty where they can best use their experience is clearly recognized.

The possible assignments to Naval medical officers are divided into five categories. Outlines of these duties follow:

1. *With the Marine Corps.*—On an invasion a doctor assigned to this duty is with the front line, as a rule going in with the third or fourth wave. The duty of this officer is comparable to that of an Army combat doctor. He works in the field.

On Marine duty, the Naval doctor may be assigned to field hospital in Marine divisions in which all major surgery is initially done on the wounded. The doctors in these hospitals have an opportunity to do more real surgical work than those stationed in major rear base hospitals. They are called upon to use great imagination and initiative.

During the initial physical phases of landing, all serious cases are evacuated to transports and hospital ships for surgery. After sufficient beachhead has been established, field hospitals are set up.

2. *Aboard a Destroyer.*—There are 149 to 325 officers and men assigned to duty on a destroyer depending upon the size of the ship. Usually one medical officer is assigned to a destroyer and he has charge of all medical

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material and stores aboard, and the treatment and care of the sick and wounded.

He also functions as a sanitation and health officer by advising the Commanding Officer in matters pertaining to the proper care of food and water and the general hygienic condition of the ship itself.

The medical officer's professional duties are similar to those of the general practitioner in a small community with emphasis on the preventive aspects of medical practice. Indeed, a destroyer is a small community in itself, and the medical officer enjoys the same respect and prestige from the crew as he does in civilian life.

3. Aboard Large Ships (Battleships, Cruisers, Carriers): The normal complement of a battleship is 1,750 to 2,600 officers and men; a cruiser, depending on whether it is light or heavy, from 700 to 1,550 officers and men; an aircraft carrier from 2,800 to 3,500 officers and men.

Three to five medical officers are assigned to the larger ships. The senior medical officer is responsible to the Commanding Officer in the same way as the destroyer medical officer described above, for the medical supplies and equipment and in an advisory capacity on matters of hygiene. The care of the sick and wounded is a greater problem of course, but is facilitated by the larger sick-bay space and elaborate equipment, such as operating tables and x-ray machines, pharmacy laboratory, et cetera.

These large air-conditioned spaces which make up the sick bay of the modern super dreadnaughts are small hospitals and function as such in every way. All types of surgical cases and illness are treated here.

The medical officers of these large ships also act in a consultant capacity to smaller vessels. In isolated ports, destroyer sailors come aboard for blood tests, X-ray examinations, treatment of fractures, and for surgical operations.

4. On an Advance or Rear Base, on a Hospital Ship, or in a Hospital in the U.S.—A doctor functions in any one of these assignments in the same way as he would when practicing general medicine and surgery or as a specialist in a large city. He has the finest equipment available to him. He works and consults with associates in the same way as he does in civilian life.

Specialists are usually assigned to shore and hospital ships in order to take advantage of their skills. For example: at the Naval Medical Center, Bethesda, Maryland, there are specialists in orthopedics, neuro-surgery, tropical diseases, chest surgery, internal medicine—indeed all the professional specialties.

5. Assignment to Medical Research.—Laboratory research under the cognizance of the Bureau of Medicine and Surgery follows in general the same line as that of important research centers in civilian medicine but is channelled according to military interests and with military application in view.

Naval Research Laboratories are constantly working on ways to improve service to the Fleet, and to the Advance and Rear Base Hospitals. The use of plasma, penicillin, the latest drugs, new methods in the treatment of burns, the changing problems in war wounds are all under the continuous scrutiny of the Naval Research Centers.

The Navy's need for doctors in all of these types of duty is still very acute, and every eligible doctor is needed now. Doctors previously declared physically disqualified are being reconsidered in view of a modification of physical requirements. Such doctors are urged to contact Lieut. R. F. Crawford of the Navy's Medical Corps at the Office of Naval Officer Procurement, 141 W. Jackson, Boulevard, Chicago, WABash 2900, in order to make an appointment for physical examination to ascertain whether or not they are qualified.

Doctors up to sixty years of age are now being considered by the Navy. Complete information may be obtained from Dr. Crawford. The doctor's tasks in the Navy are clear and concise. The need for men to fill these assignments is critical. Help . . . NOW!

COMMITTEE ON POSTWAR PLANNING

Report of the Subcommittee on Revision of Program for Enrolment of Medical Students

After a careful analysis of present and probable post-war needs for medical service and the supply of physicians available to meet these needs, your subcommittee is convinced a serious shortage of physicians will develop in this country unless there is a continuance of the full complement of medical students. Under existing conditions, this will not be possible. There is no provision for the deferment of suitable qualified applicants in premedicine and medicine subsequent to 1945.

It is estimated that during 1945 about 75 per cent of the normal enrolment of first year medical students can be provided as follows: Army (ASTP) 28 per cent, Navy (V-12) 25 per cent and physically disqualified for military service (including 4F, returned veterans, aliens and others) and women 22 per cent. At present the only prospects for students during 1946 can come from the following sources: Army none, Navy 10 per cent and physically disqualified and women possibly 30 to 35 per cent. Hence there will be unfilled about two thirds of the places in the freshmen classes of approved medical schools or 1,500 vacancies.

Recently there has been introduced into the Senate by Hon. Mr. Ellender a bill known as S. 637, dated Feb. 25, 1945, that would authorize "the release of persons from active military service and the deferment of persons from military service, in order to aid in making possible the education and training of physicians and dentists to meet essential needs."

Your subcommittee, after a careful study of the bill, believes it embodies the essential provisions to meet the current defect. It recommends the committee express approval of the general features of the bill and support the bill by means of appropriate action through its constituent organizations and other organizations and individuals interested in the health and medical care of the nation.

(Signed) Ernest E. Irons, M.D., Morris Fishbein, M.D., Victor Johnson, M.D., Harold Diehl, M.D., Harold C. Lueth, M.D. (J.A.M.A., April 7, 1945.)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics

of the

Minnesota State Medical Association

George Earl, M.D., Chairman

MEDICAL CARE THERMOMETERS SHOW RISING PUBLIC INTEREST

Both publicly and behind the scenes, interest in attaining a better distribution of medical care continues to hold the spotlight. The number of articles concerning this subject which are currently appearing in leading magazines and newspapers is only one indication of that interest. But most significant of all thermometers of rising public opinion that could be had, perhaps, is the number and character of proposals made to numerous state legislatures for developing voluntary medical care plans on the one hand, and compulsory cash sickness plans on the other.

Voluntary Medical Care Bills Enacted

So far in 1945, laws authorizing organization and operation of nonprofit medical service plan corporations on a voluntary basis have been enacted in Tennessee, Iowa, North Dakota and Minnesota, stepping up to twenty-one the number of states where such plans are now operative. Similar bills are in process of enactment in Kansas and South Dakota. In addition, a law permitting a nonprofit hospital service corporation to operate a supplementary medical service plan in conjunction with its hospital plan has been enacted in West Virginia.

It is understood that the Iowa Medical Service, sponsored by the Iowa State Medical Society, expects to offer to the public a medical plan which in some aspects is broader than any plan now operating under medical society auspices. Subscribers will be insured against the costs of surgical and obstetric services in or out of the hospital and medical care for hospitalized illnesses after the first three-day period in the hospital. X-ray examinations will be covered not to exceed \$15 for each service; \$10 will be allowed for anesthesia. The basic cost is to be \$1.00 for individuals and \$3.25 for the family contract.

Compulsory Health Insurance Pressure On

Actual pressure in favor of one or another types of compulsory health insurance has been greatest in the states of California, Washington, Massachusetts and New York.

Here in Minnesota we had a sampling of proposed compulsion by way of a cash sickness bill that was introduced into the legislature under which 1 per cent of an employee's wages or salary was to be deducted each month and deposited in a benefit fund established by the state and kept in the state's general fund. The bill proposed that an employee who was unable to work because of sickness or illness, would receive a weekly payment ranging from \$7.00 to \$20.00 over a period up to twenty weeks, commencing two weeks after disability. However, expected pressure for the bill from certain groups failed to materialize and nothing further came of it. In the state of Washington, also, the legislature adjourned without taking any action.

California Plans in the Limelight

The California legislature was subjected to the largest grist of compulsory proposals, but among these only three seem likely to gain serious consideration—those, namely, sponsored by the California State Medical Association, which is semi-voluntary; by Governor Warren, and that sponsored by the CIO.

Governor Warren's bill proposes to establish a California Health Service Authority in the Department of Public Health, in addition to the existing officers and board. This authority is to consist of 11 members to be appointed by the Governor. Its executive-secretary, also, is to be appointed by the Governor at a salary of \$12,000 a year.

Governor Warren's bill is similar, in many respects, to that sponsored by the CIO. Both propose that their respective systems be financed

by a payroll tax of 3 per cent shared alike by employer and employee on salaries up to \$4,000 under the Governor's bill and \$5,000 under the CIO proposal. Both cover essentially the same groups now covered by the California Unemployment Insurance Act, which excludes farmers, domestic servants and self-employed. However, in both instances, indications are that future expansion will cover these groups. The CIO bill, in addition, makes arrangements to cover indigents.

As to benefits, services of the general practitioner and specialist are offered in the home, office and hospital, as are hospitalization, laboratory services, x-ray, physiotherapy and appliances. Governor Warren's bill specifically states that referrals to specialists must be made by general practitioners. The two bills differ in the method of paying the physicians: the CIO measure specifies capitation for general practitioners and fee for service for specialists; Governor Warren's bill proposes paying all physicians on a fee for service basis. In both bills beneficiaries have free choice of physicians and hospitals, and physicians may accept or reject patients.

In presenting his Bill to the Legislature, Governor Warren stated: "I am not for socialized medicine where doctors are put on the public payrolls and medical care of the people is financed by public funds. I don't believe in that system. I do want to spread the cost of medical care by compulsory contributions of workers and industry, both of whom will be the beneficiaries."

California Medical Association Bill Semi-Voluntary

The California State Medical Association is sponsoring a semi-voluntary plan to tie in with and supplement existing voluntary plans of which there are many in the state. Under its bill, no new bureau is proposed and no additional governmental employees are contemplated. The bill is in the form of an amendment to the Unemployment Insurance Act which has proved to be more than adequate for unemployment relief under the existing tax structure. It is proposed that it be further utilized to assist in spreading the cost of medical care.

The bill has three main provisions:

1. To encourage people to enroll in existing voluntary, nonprofit medical and hospital plans, the bill proposes to cut the employee's 1 per cent

payroll contribution to the unemployment fund in half. Thus an employee who enrolls himself and his family in a nonprofit medical and hospital plan would thereafter be taxed one-half of 1 per cent instead of 1 per cent by the state unemployment act.

2. The bill allows employers to make payroll deductions for all employees for payment of dues or premiums for approved hospital, medical or surgical prepayment plans. Exceptions under this rule are made for employees who state in writing their objections to inclusion in such plans.

3. The bill provides that regular unemployment benefits will be paid to employees who are hospitalized for illness and who are not covered for hospitalization by an approved nonprofit plan.

It is felt that if this bill becomes a law, the bulk of the low and middle income population of the state will enroll in voluntary plans. This, many people believe, can be accomplished without increasing the tax structure and further penalizing California business and industry. At the same time, because private enterprise always operates more efficiently than governmental monopolistic bureaus, that are so seldom subjected to the acid test of an auditor's balance sheet, the people will get more value for each dollar paid than they ever will through a compulsory plan.

Legislators and Public Uncertain

There is a good deal of uncertainty in the public mind about the various compulsory proposals that are being hatched. Where will they lead? Are they really needed? The cost of the proposals is likewise an important factor. Legislators, apparently, have not found clear-cut answers. Moreover, there seems to be a gap between the attitude of labor leaders and some of their nominal followers. The latter, always restless over the numerous and, in total, large deductions from their pay envelopes, are not unanimously anxious for further compulsory deductions.

Business and professional interest have questioned the need and desirability of such legislation and have conducted researches which have reached a point at which they are able to present substantial evidence in dispute of many of the claims of proponents raising many serious doubts in the minds of the legislators.

In most of the states, many of those who would

be covered by the proposed legislation are already covered through group or individual policies underwritten by health and accident companies, and other types of organizations, and the number so covered is rapidly growing. Then, too, the chief medical care problem is in rural areas, but for practical reasons, none of the measures include rural populations in their coverage.

However, the fact that not more than one or two, and perhaps none, of these state compulsory health insurance measures is likely to be adopted this year, is no sign that interest in such measures is waning. A number of states have pending proposals for legislative studies; New York and Washington have already adopted such proposals. A continuation of a good deal of activity in this field is to be expected.

National Health Legislation in the Offing

Washington observers seem to agree that, in the matter of federal proposals for the extension of medical care, there is something coming in the way of definite recommendations following the enactment of the Hill-Burton Hospital Construction Bill. But, as has been pointed out by Surgeon General Parran, and reaffirmed by the Senate Subcommittee on Wartime Health and Education, often referred to as the Pepper Committee, discussions of detailed methods and plans for the extension of medical care are premature unless and until adequate hospital and medical center facilities have been provided in those communities which, in the opinion of state professional groups, require them.

Many Washington writers have been warning their readers to watch for a new Wagner Bill in this session of Congress. They point out that the first Wagner-Murray-Dingell Bill drew much fire and considerable criticism which indicated the principal objections of medicine and other groups. Many of these objectionable points, it is predicted, will be eliminated from the new Wagner Bill in the hope of gaining wider support.

Senator Pepper Has Different Approach

Observers have commented that Senator Pepper has indicated an understanding and appreciation of medicine's position which is entirely different from Senator Wagner's approach. He has shown a sympathetic attitude towards volun-

tary prepaid medical care plans but insists that these, to accomplish the ends sought, must provide complete, rather than limited, coverage and must be offered at a low cost. Repeatedly, Senator Pepper has sought to draw witnesses, appearing before his Committee, into discussions of the idea of federal grants to state, or even to groups which have acceptable prepaid medical care plans, not suggesting federal control but rather a broad system of subsidies to assist these plans to reach all elements of the population and, in his opinion, operate more effectively. Senator Pepper has expressed doubts that the American people are now ready, or ever will be, for a compulsory health insurance plan. This is in sharp contrast to views held by Senator Wagner.

While Senator Pepper has sought suggestions of interested parties of all shades of opinion, Senator Wagner has apparently been content to listen only to the views of social planners and labor leaders who take the attitude that lack of facilities for adequate medical care among working people has resulted in a serious condition as respects the general health of the nation. These latter advocate a national system of compulsory medical care upon the theory that the health of the nation could be promptly and materially bettered as a result.

No More Than They Are Now Doing

Again it must be emphasized, that this type of argument is by no means supported by the results of similar plans in European countries. Some of these countries have had compulsory plans in force for many years, but the results from the point of view of improving national health, have not been notably more satisfactory than those attained in this country through the system of private practice here.

The busiest men in the world today, American doctors, are frankly puzzled by the hue and cry, but anxious to do everything within their power to improve conditions. They are, however, at a loss to know how any government bureaucracy could better organize their work or enable them to do any more than they are now doing. They are acutely aware, also, of the shortage of hospital beds which would inevitably become acute if such a system, either at state or federal levels, were imposed.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

Columbia Heights Woman Sentenced to Eight-Year Term for Criminal Abortion

Re: State of Minnesota vs. Ruth Lindholm

On April 6, 1945, Mrs. Ruth Lindholm, fifty years of age, 3910 Lookout Place N. E., Columbia Heights, was sentenced to a term of two to eight years at hard labor in the Women's Reformatory at Shakopee for criminal abortion. The defendant was convicted following a trial lasting eight days in the District Court of Hennepin County. Mrs. Lindholm was arrested on February 6, 1945, by Minneapolis police officers following the admission of a young girl to Minneapolis General Hospital suffering from the after-effects of a criminal abortion. The patient stated she paid the defendant \$35.00 to do a criminal abortion and that it was performed by the defendant at the patient's apartment by the use of elm stick. The patient also stated that she had a previous abortion in June or July of 1944, that was performed by Mrs. Lindholm.

Mrs. Lindholm has a previous conviction for manslaughter in the first degree, following a criminal abortion, on September 26, 1929. On October 3, 1929, the defendant was sentenced to a term of five to twenty years in the Women's Reformatory at Shakopee for that offense. She served less than two years, being released on May 15, 1931. The defendant was again arrested on July 17, 1934, charged with criminal abortion. On July 19, 1934, the defendant was adjudged insane and committed to the State Hospital at St. Peter. Several attempts were made to secure the release of the defendant from the State Hospital at St. Peter. However, the records in the District Court and Probate Court at Anoka disclose that no order was signed for the release of this defendant from the State Hospital at St. Peter. On September 21, 1944, a notice was received by the Probate Court of Anoka County from the Superintendent of the State Hospital at St. Peter advising that defendant "is hereby discharged recovered in accordance with the provisions of Sec. 4098 Revised Laws 1913." The present case discloses that it was not long before Mrs. Lindholm returned to the abortion racket. It is the hope of the Minnesota State Board of Medical Examiners and the authorities in Hennepin County, that the defendant, for the good of society, will be required to serve her sentence as imposed by the Court.

ENGLISH COMES FIRST IN NEW U. S. PHARMACOPOEIA

For the first time, the English language will take precedence over Latin in the U. S. Pharmacopoeia, the official compendium of drugs. After six years of discussion in the U. S. P. Committee of Revision, of which Dr. E. Fullerton Cook is chairman, it was decided that the new Pharmacopoeia, scheduled for publication in December, would carry the English names of drugs first, followed by the Latin. Medical members of the Committee were chief advocates of the change.

The U. S. Pharmacopoeia was first published in the 1820's, and has been published at ten-year intervals since. Recently, the Pharmacopoeia Committee decided a new issue should appear every five years, but it is understood that this decision may be reconsidered. Because Latin had been the language of science, it was used in drug and medical nomenclature.

In Memoriam

ALEXANDER H. DUNLOP

Dr. A. H. Dunlop of Crookston died March 19, 1945, after a brief illness at the age of eighty-seven.

Dr. Dunlop was born September 14, 1857, in Ontario, Canada. He graduated from Queens College at Kingston in 1875 and received his M.D. from McGill University in 1882. The same year he began practice at Crookston, and continued until a few years ago.

He took postgraduate work on several occasions in New York or at McGill University. He was a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations, and was local surgeon for the Great Northern Railway. He was also a member of the Masonic order, the Modern Woodmen and the Elks lodge.

In 1912, Dr. Dunlop married Annie Bolie, who survives him.

* * *

FRANK S. WARREN

Dr. Frank S. Warren, for many years a resident of Faribault, Minnesota, died February 19, 1945, at Washington, D. C., where he has resided since 1931.

Born in Saint Paul, May 9, 1874, he attended Saint Paul public schools, and graduated from the University of Minnesota medical school in 1896. After internship at the Ancker Hospital in Saint Paul, he began practice at Faribault in 1898.

On several occasions Dr. Warren took postgraduate study at the New York Postgraduate Medical School. During World War I he served a year in the Army. He served for many years as vestryman of the Cathedral of Our Merciful Savior and was active in local Masonic circles. He was a member of the Rice County Medical Society and of the state and national medical associations. He is survived by his widow and daughter, Alice.

ANTI-GERM ACTIVITY FOUND IN BUTTERCUP JUICE

The possibility of a remedy like penicillin being developed from buttercup juice appears in a report by Dr. Beatrice Carrier Seegal and Dr. Margaret Holden, of Columbia University College of Physicians and Surgeons in *Science* (April 20).

Growth of streptococci, staphylococci, pneumonia, anthrax and tuberculosis germs and a number of other micro-organisms that cause sickness in humans was topped by juice pressed from buttercup leaves, stems and blossoms. A steam distillate of this pressed juice was also effective. Anemone juice gave similar results.

The use of the buttercup juice as a remedy in infections was prevented by its toxicity for laboratory animals. The distilled juice is less poisonous than the whole juice. Chemical methods are now being developed, the scientists report, in an effort to separate the poisonous from the anti-germ substances.—*Science News Letter*, April 28, 1945.

Minneapolis Surgical Society

Meeting of December 7, 1944

The President, Daniel MacDonald, M.D., in the Chair

DIVERTICULA OF THE JEJUNUM

JAMES A. JOHNSON, M.D.

Minneapolis, Minnesota

In 1941 I presented before this society a discussion on "Diverticula of the Alimentary Canal"; tonight I am going to show you an interesting specimen of multiple diverticula of the jejunum.

There are two types of diverticula of the small bowel: (1) the congenital represented by Meckel's diverticulum; (2) the acquired or pulsion type. The etiology of the pulsion or herniation type which this case represents has been definitely established by Edwards and others. The diverticulum presents itself as a herniation through the weakened areas in the bowel where the vessels penetrate through the muscular coat. The diverticula, as a rule, are found on either side of the mesenteric border where the vessels show at the base of each pouch. Pulsion diverticula of the small bowel are almost entirely confined to the jejunum. It is only when the entire bowel is involved that they are found in the ileum.

The first case was reported and described by Sir Astley Cooper in 1844, when he found pouches in the proximal portion of the small bowel during a post-mortem. The first roentgenological diagnosis was described by Case in 1920. Rankin and Martin estimated that it would be found only once in every 25,000 routine roentgenological examinations of the gastro-intestinal tract. Edwards collected sixteen cases in a period of twelve years at Kings College Hospital in London; eight were found at postmortem, four at operation and four on x-ray examination. The average age was fifty-five. Edwards carefully searched 881 cadavers and found some evidence of mesenteric diverticula in five cases. The small bowel is the least frequent location for diverticula in the alimentary canal. According to Kozinn and Jennings reporting a case in the *American Journal of Diseases of Children*, September, 1941, only 187 cases can be found in the literature, and most of these have been reported during recent years. It is found most frequently during postmortem examination. Those discovered at postmortem are about three times as frequent as by x-ray, or operation.

The symptoms result from retention of food, inflammation, or obstruction, especially from a volvulus. There is often vague upper abdominal distress after meals, and when obstruction occurs, there are periods of recurrent attacks of vomiting. The diagnosis is made by x-ray examination and this can only be accomplished when the pouch fills so that they can definitely be recognized. The treatment will depend upon

the severity of the symptoms. Many of the smaller diverticula produce no disturbance and are of very little importance. It is only when marked symptoms of inflammation or obstruction appear that operation is indicated.

Case Report

H. D., aged seventy-two, was admitted to the hospital September 24, 1944. At the age of twenty-two he had had an attack of pneumonia; otherwise he had always been in good health. His present trouble began twelve months ago with a great deal of bloating after meals. This gradually became a severe distress and he would regurgitate his food, and recently he had developed attacks when he would vomit a great deal of food, apparently retained for a considerable length of time. His symptoms had gradually increased and he had lost about ten pounds during the past six months.

On examination he was a poorly nourished, cachectic old man. There were active peristaltic waves in the upper abdomen with a diffuse soft mass indicating some type of obstruction. His general condition was fair except that he had a chronic cough and was quite dehydrated. The blood pressure was 135 systolic and 88 diastolic. All laboratory examinations were essentially normal except that he was slightly anemic. X-ray examination revealed that the stomach was displaced to the right side of the abdomen by a soft mass on the left side. In this soft mass were several pouches where the barium was retained.

On September 30, 1944, he was operated upon. The gall bladder and liver were normal as were also the ducts and pancreas. There was no evidence of anything abnormal in the lower abdomen. The stomach was very large and there was marked hypertrophy of its walls, especially over the pyloric end. The duodenal portion was almost as large as a normal stomach and was very much hypertrophied. In the first part of the jejunum there was a section of bowel about 2.5 feet in length that contained multiple large diverticula at the mesenteric border. One of these diverticula had become adherent at the root of the mesentery in such a way as to cause a volvulus of that portion of the jejunum. The diverticula were all above the obstructed area and this probably was largely responsible for their development. Resection was made with an end-to-end anastomosis. The pathological report shows a specimen consisting of 42 cm. of small bowel. On the mesenteric border there are fourteen diverticula; the largest measures 5x4x4 cm. None of them showed secondary infection. Postoperative convalescence was a little slow because of his being depleted of food before the operation. For a few days he showed some disorientation and had a little trouble with bronchial cough. He was out of bed, however, in the usual time and returned to his home on October 22, at that time able to eat ordinary, regular meals.

Discussion

DR. MARTIN NORDLAND: The occurrence of diverticulum of the esophagus is not rare but is encountered only occasionally in the average surgeon's experience. The history in a well-developed case is suggestive, but the x-ray diagnosis is necessary for confirmation of the

diagnosis. Even with x-ray, the diagnosis is occasionally missed.

About two years ago I had a patient with a history suggestive of diverticulum in the esophagus. Eructation of food that he had ingested several days previously frequently occurred. The patient did not have vomiting. He had a sensation of fullness of the throat at times. The x-ray revealed a rather large "pouch" in the esophagus at the level of the seventh cervical vertebra. At operation an attempt was made to find the neck of the large sac. Doctor Phelps introduced the esophagoscope. The neck of the sac could not be found. During this procedure the pouch was accidentally ruptured. Investigation revealed that the entire sac was a tremendous distention of the esophagus above a carcinomatous involvement at a slightly lower level. The pouch was closed. Sulfanilamide was introduced into the surrounding tissues. The wound healed quickly without infection. Several roentgenologists who reviewed the film stated that it had the appearance of a diverticulum. Such an error could be avoided by having the patient swallow a string before surgery.

We have only done the one-stage operation for pulsion diverticulum, and we feel that there is no necessity for the two-stage operation. We feel particularly secure since we have had the advantage of the use of sulfanilamide crystals in the wound around the suture line. The one-stage operation permits a clean dissection of the sac. When the neck of the sac is accurately sutured with eye silk and covered with a muscular investment of the esophagus, clean and secure healing results. There is decidedly less probability of incomplete operation and of stricture of the esophagus postoperatively.

DR. J. A. JOHNSON (closing): I have nothing more to add except again to reiterate that the pulsion type of diverticula have the same causative factor throughout the gastrointestinal tract; that is, they are herniations through weakened portions in the tract where the vessels penetrate the muscular coats. They are common in the first portion of the esophagus, in the duodenum, most common in the sigmoid where one encounters them constantly in people beyond midlife; they are uncommon in the stomach, and are seldom found in the small bowel. It is because of this that I thought it worthwhile reporting this particular case.

CARCINOMA OF THE ILEUM

HARVEY NELSON, M.D.

Minneapolis, Minnesota

As compared with carcinoma of the stomach or colon, the diagnosis of carcinoma of the small bowel is difficult to make. The fact, too, that carcinoma of the small bowel is comparatively infrequent, constituting probably no more than 3 per cent of intestinal carcinomata, does not afford the opportunity for study and analysis as has been the case in the remainder of the intestinal tract. There seems to be, therefore, justification for reporting cases, if for no other reason than to accumulate information that will eventually make this condition better understood. The diagnostic problem presents a challenge which is still far from solved.

Pathology.—Adenocarcinoma is the most common type and may appear as a papillary growth or an ulcerative

lesion, but very often is a stenosing tumor presenting a ring constriction very similar to the annular type of carcinoma frequently found in the sigmoid. The papillary type usually protrudes into the lumen and will also cause obstruction due either to its actual encroachment on the lumen or from intussusception. As a result, some form of obstructive symptoms sooner or later occurs. Histologically the simple adenocarcinoma is by far the most common, although colloid carcinomata and rarely medullary or scirrhous carcinomata have been reported. Because of the rich lymphatic supply in the small intestine, carcinomata here metastasize early and the prognosis, therefore, is poor. Rankin reports a life expectancy of one month to three years with the average less than one year. Others report similar experience with survival, for any extended period, a rarity.

The so-called carcinoid tumors occur occasionally in the lower ileum and cecum, although more commonly in the appendix. They rarely surround the lumen of the bowel, do not ulcerate, and even the malignant types grow slowly. As a result, blood in the stool and toxic symptoms are not found. These are generally non-malignant although a number of cases have been reported with metastasis.

Sarcomas are less frequent in the ileum than carcinomas. Horsley reports a primary melanocarcinoma of the ileum as a rare tumor. We have had one case of mucoid carcinoma of the appendix which was discovered at the time of an inguinal herniotomy when mucoid material was present in the hernial sac. A tumor mass could be felt in the region of the cecum. Exploration revealed about a pint of mucinous fluid in the peritoneal cavity apparently arising from a tumor of the appendix. The appendix was markedly enlarged and thickened and had a perforation in one side which admitted the small finger. Surrounding the perforation was a mass of reddish-colored tissue with a large amount of mucus. A microscopic diagnosis of mucoid carcinoma was made with pseudomyxoma peritonei. The patient has been symptom free now for about two years.

Clinical Picture.—The clinical picture of carcinoma of the small intestine does not present any characteristic pattern until actual obstructive symptoms appear. Nevertheless, the history of certain repeated or persistent symptoms should not be treated casually and warrant the most careful investigation. Probably the earliest symptoms would be irritative and, therefore, would consist of recurrent diarrhea or alternating diarrhea and constipation, a feeling of gaseous distention with a feeling of vague discomfort or fullness, especially after meals, occasional periods of nausea and a feeling of weakness and fatigue. These symptoms then persist or appear recurrently until actual symptoms of recurrent partial obstruction develop, which include attacks of colicky pain and constipation with the common complaint that defecation is incomplete and does not relieve the "gas." The obstructive symptoms are incomplete and recurrent as the fluid control of the small bowel alternately is temporarily held back by some more solid

food particle caught in the stenosed lumen and then relieved when the pressure behind it forces the obstructing material through. As the picture progresses, anemia, increasing weakness and loss of weight occur.

In some cases a tender mass can be palpated at the site of the tumor but frequently the generalized discomfort of the dilated loops of small bowel conceals the localized tender area and the abdominal distention makes palpation of the tumor difficult. However, careful abdominal palpation after decompression might disclose the tumor mass.

Secondary anemia and the finding of blood in the stools are important corroborative findings.

The x-ray offers material aid. The negative findings of an ordinary gastrointestinal study indicating a normal stomach, cap and colon in a case with persistent symptoms such as described above, should be accepted for only what its negative value is worth with regard only to the stomach, cap and colon. Such findings might be very helpful in ruling out these parts of the intestinal tract but offer no assurance as to the condition of the small bowel. As Wangenstein states, "The roentgenologist rarely identifies the presence of carcinoma in the small intestine by barium studies," but it only seems reasonable that if the roentgenologist is given the opportunity and the experience of detailed small bowel studies, something worthwhile will be contributed to our pre-operative diagnosis. I am certain the tumor in one of our cases could have been so identified. Such x-ray studies would require a one- two- four- and six-hour follow-up of barium meals instead of the usual six-hour study. Flat x-ray plates of the abdomen are of considerable value in the presence of obstructive symptoms, not only in differentiating small bowel obstruction from other forms of obstruction but also in localizing the site of the obstructive lesion.

Case Reports

I should like briefly to present three cases, one of which proved not to be a carcinoma but which I believe is of some interest in differential diagnosis.

Case 1.—J. E. M., a seventy-one-year-old man, was originally seen in April, 1943, at which time he gave a history of abdominal pain a week previous followed by a similar attack a week later. This was later proved to be incorrect as the family informed that he had had symptoms for a number of months. The pain was relieved some by both belching and passage of gas. He had had a good deal of diarrhea. He had not vomited but was unable to eat much and had lost twenty pounds in weight. The hemoglobin was 102 per cent, the red blood cell count 4,800,000 and the leukocyte count 6,600. No mass was palpable at this time. X-rays were requested but refused. The patient was then not seen for a month but on return complained of the same recurrent attacks of pain and further loss of weight. At this time a complete gastrointestinal study was done without special studies of the small bowel and these x-rays were negative. Within the next couple of weeks the patient was prevailed upon to enter the hospital and by this time a mass could be palpated in the lower right central abdomen. A further gastrointestinal x-ray was negative but detailed small bowel studies showed a deformity of the terminal ileum and

some definite evidence of small bowel infiltration. He was operated upon June 24, 1943, and an extensive inoperable carcinoma of the ileum was found. Deep x-ray therapy was administered and the patient lived until July 24, 1944.

Case 2.—L. A., a sixty-four-year-old man, was first seen on March 1, 1944, at which time he complained of feeling somewhat tired and having no pep. He had discontinued drinking, which he had always done very extensively. At this time he complained of some vague rheumatic pains but presented no abdominal symptoms. On October 10, 1944, he reported back complaining primarily of abdominal pains with constipation, loss of weight of about fifteen pounds, some weakness, but no nausea, vomiting or diarrhea. He located his pains across the lower abdomen and stated that he felt as though "a good bowel movement would relieve his symptoms." There was no diarrhea. The hemoglobin was 84 per cent and the red cell count 5,200,000. No mass could be palpated but the patient was quite obese, making it difficult to determine either the presence of abdominal distention or a mass. A complete gastrointestinal x-ray showed evidence of a gastritis but was otherwise negative. No small bowel study was done at this time. It was felt that the gastritis fitted in with the history of alcoholism and conservative management was, therefore, decided upon. He was seen about ten days later, at which time he was better but still complained of intermittent attacks of pain and constipation. On November 2, 1944, he began to vomit in the morning, continued to vomit a good deal during the day and finally entered the hospital that evening. At this time he was complaining of colicky lower abdominal pain, was distended, had a normal temperature, had a pulse of 100, a hemoglobin of 104 per cent, a red cell count of 6,010,000 and a leukocyte count of 16,850, with 89 per cent P.M.N. cells. His intense vomiting undoubtedly distorted the blood picture. A flat plate of the abdomen revealed a small bowel obstruction probably in the right lower quadrant with evidence of a mass in this region. Considerable fluid and gas was noted in the small intestine proximal to this area. The patient was operated on immediately and a tumor mass was found in the terminal ileum about 4 to 6 inches proximal to the cecum. An annular constriction was present and later examination disclosed a stenosis which just permitted the penetration of a Kelley clamp through the lumen at this point. There was no evidence of any metastasis. The tumor was resected and an end-to-end anastomosis done without drainage. Convalescence was uneventful with the exception of severe hiccoughs which developed on the fifth day and persisted for a week, and the drainage of hematoma on the twelfth day. At the time of his discharge from the hospital the drainage had ceased and he was feeling well.

Case 3.—W. W., a man, aged fifty-two, was seen at the office on November 11, 1944, complaining of abdominal pain of a colicky character for two weeks with constipation and no diarrhea. He was moderately distended. The leukocyte count and differential were normal. He was admitted to the hospital on the following day for further study and because of increased pain. He was nauseated but had not vomited. The hemoglobin was 100 per cent. The leukocyte count was 9,600, with 65 per cent P.M.N. cells. A colon study revealed a few diverticulae in the sigmoid and some apparently impacted stool in the cecum. On November 16, a complete gastrointestinal study was done which showed a fairly high degree of small bowel obstruction which appeared to be located in the distal ileum. A moderate sigmoiditis with diverticulae was noted, as was also an old scar from a duodenal ulcer. A tentative diagnosis of small bowel obstruction, possibly due to carcinoma, was made. On November 18, he was

operated on. The cecum was found to be rotated in such a manner that the ileocecal valve and ileum were located posteriorly with both the cecum and ileum being firmly bound down posteriorly. A very long and large appendix filled with fecoliths and slightly inflamed lay directly across the terminal ileum. The distal three feet of the ileum was dilated while the proximal ileum was completely normal. The cecum was normal and a careful examination of both the ileum, cecum and colon showed no evidence of any tumor. The appendix was removed and the obstructive symptoms cleared up.

Conclusions

Two cases of carcinoma of the ileum are presented. It is believed that in one of these cases an earlier diagnosis could have been made and detailed small bowel x-ray studies would have disclosed the tumor at the time that the original gastrointestinal x-rays were done.

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THE PRESENT STATUS OF PENICILLIN THERAPY

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A rather comprehensive subject for discussion has been chosen for me and I shall relate only some of the more essential details. This subject is changing rapidly with added clinical information but we have now had enough experience to warrant certain conclusions. During the past two and a half years, Dr. Wendell Hall and myself have supervised the treatment of approximately 300 patients who have received penicillin for various types of infections.

There are a few important principles involved in using penicillin that can be appropriately discussed at this time.

1. Penicillin is bacteriostatic in its action, that is, it acts upon micro-organisms by inhibiting the growth of bacterial cells. Under some circumstances, the antibiotic may actually kill bacteria, and this action can be considered bactericidal or bacteriolytic.

2. Penicillin is highly specific in its action upon bacteria. In this respect, it simulates the sulfonamides. This means that the clinician should know the etiology of the disease which he is undertaking to treat. Precise bacteriological data is essential if penicillin is to be used intelligently.

3. Penicillin, up to the present time, cannot be given effectively by rectum for the treatment of serious infec-

tions. There are indications that significant amounts may be absorbed from the intestinal tract when penicillin is given by mouth. But this route of administration requires further rigid clinical evaluation. Therefore, penicillin is injected parenterally. One may give the material by intermittent intravenous injections, or by means of a continuous intravenous drip. Similarly, solutions of penicillin may be given intermittently or continuously by the intramuscular route. We do not use the material subcutaneously because of the local irritative effect that it produces at times, and also, because we are not certain that absorption is as efficient as that following intravenous and intramuscular therapy. The salts of penicillin may be dissolved in physiological saline solution or in distilled water with 5 per cent glucose. Penicillin may be introduced simultaneously with plasma or blood transfusions. Because penicillin is excreted rapidly from the body through the kidneys, and because the action of the drug is one of bacteriostasis necessitating contact with the bacterial cells for an appreciable length of time, it is essential that frequent injections be made if the intermittent intramuscular method of injection is used. In serious infections, this means that material should be administered every two hours during the initial stages of therapy. There is some evidence that the control of severe infections is not entirely related to the total dose of penicillin used but also to the length of time over which even relatively small concentrations of the drug are maintained in the tissues and body fluids. Thus 100,000 units of penicillin, if properly used, will eradicate gonorrhea in the average patient, but if this amount is given in one injection, therapeutic failures are not infrequent.

Penicillin may be applied locally to septic areas in the form of solutions or ointments. Physiological saline solution with 1,000 units per cubic centimeter has been used successfully, and ointments containing 500 to 1,000 units per gram. We have found that sterile solutions of penicillin maintain their stability for several days if kept in the refrigerator. We are reluctant to use the powder of penicillin locally because it is irritating to tissues.

4. The question is frequently raised by clinicians if it is necessary to determine the blood or body fluid concentrations of penicillin. Since the methods involve the aid of biological assays, they are not too practical, and dosage schedules are now available which obviate this procedure.

5. One of the problems associated with sulfonamide therapy has been the acquired development of sulfonamide-resistant strains of bacteria. Thus far, there are indications that occasional strains of organisms may develop resistance to penicillin, but this has not constituted much of a clinical problem. We have encountered two cases of staphylococcal infections where a therapeutic failure has possibly been associated with the development of penicillin-resistant organisms.

6. The mechanism of the antibacterial action of the sulfonamides is different from that of penicillin. Therefore, is there any therapeutic advantage to be obtained in combining sulfonamide with penicillin therapy, providing the microorganisms are susceptible to the action

of both drugs? There is very little clinical information available pertaining to this possibility. Available data would indicate that the combination is more effective in the treatment of pneumococcal meningitis than when either drug is used alone. *A priori*, the efficiency of penicillin should be reduced in the presence of the sulfonamides, since the action of penicillin is dependent upon multiplying or dividing bacterial cells, and the sulfonamides inhibit bacterial growth. It is obvious that this problem needs further clinical investigation.

Clinical Results With Penicillin

Time does not permit a thorough review of the results that have been obtained with penicillin. Furthermore, many clinical reports have appeared in recent months covering this subject. At present, we shall confine ourselves to the experience at the University of Minnesota Hospitals.

Staphylococcal Infections.—Penicillin is the most effective agent available for the treatment of severe staphylococcal infections. The mortality rate of patients having untreated staphylococcal bacteremia is between 60 and 80 per cent. With the use of penicillin, we have had a rate around 30 per cent. Failures with penicillin have been due to the development of an acute staphylococcal endocarditis; the use of inadequate doses; and the persistence of foci, such as thrombophlebitis, which have not been eradicated by the drug. In adults having acute staphylococcal bacteremia with or without osteomyelitis, we inject 20,000 units of penicillin intramuscularly every two hours until the infection has been brought under control. Then the dose is gradually reduced. We have used one to two million units in the treatment of a group of cases. We have had a few instances of acute osteomyelitis of the long bones where the infections appear to have been completely arrested for as long as two years after treatment. One interesting feature has been the extensive decalcification of an infected long bone following the use of penicillin, as demonstrated by x-ray films. However, with the passage of time the normal density of bone is assumed. Our results in the treatment of chronic osteomyelitis of staphylococcal origin have been less fortunate. Improvement has occurred, but in the majority of the treated cases there has been a recurrence of draining sinuses and other evidences of a failure to eradicate the infection completely. We are now of the opinion that surgery should be combined with the parenteral pre-operative and postoperative administration of penicillin. Following this practice, the outlook for these patients appears more promising. Staphylococcal infections of the soft tissues often respond in dramatic fashion to the systemic use of penicillin. This also applies to the local application of ointment and solutions containing penicillin.

Streptococcal Infections.—Infections due to Group A hemolytic infections such as erysipelas, bacteremia, otitis media, cellulitis, et cetera, often respond quite well to the sulfonamides. Group A hemolytic streptococci are quite sensitive to penicillin, and one can an-

ticipate rapid clearing of the blood stream of these organisms when penicillin is utilized.

Some strains of nonhemolytic streptococci, particularly *streptococcus faecalis*, are very insensitive to penicillin and therapeutic failures should be expected when this species is encountered in an infection. Most strains of *streptococcus viridans* are sensitive to penicillin.

We have not been very much impressed by the results with penicillin in the treatment of scarlet fever, tonsillitis, and acute nasopharyngitis due to hemolytic streptococci. Specific antitoxin or convalescent serum are effective agents in the treatment of severe cases of scarlet fever. Penicillin is without benefit in the treatment of acute rheumatic fever.

Pulmonary Infections.—Pneumococcal pneumonia responds promptly to penicillin and with relatively small doses. Less than 500,000 units have been used in controlling a severe infection. So-called atypical pneumonia of virus origin is not benefited by penicillin.

We have had very favorable results with penicillin in patients having lung abscesses. Several individuals with abscesses due to staphylococci recovered completely. Similar results have been obtained in patients with pulmonary abscesses due to mixed infections, but the micro-organisms were streptococci and staphylococci. Final recovery was achieved in these patients after other medical treatment had failed, including the administration of sulfonamides. In these cases, treatment with penicillin was carried out for days and weeks.

Empyema involving the pleural cavities and due to staphylococci, streptococci, or pneumococci has been eradicated by the aspiration of the purulent material in the pleural cavity every twenty-four to forty-eight hours, and the instillation of solutions of penicillin after each aspiration. The results were more prompt when penicillin was also given parenterally. A word of caution is necessary in the treatment of empyema with penicillin. The object of therapy is not only to eradicate the infection, but also to restore the lung to normal function. If treatment is prolonged too long, a thickened pleura with a partially collapsed lung may follow. If, after therapy has been carried out for several days, the infection has not been eliminated, and the lung has not expanded, it becomes necessary to interfere surgically.

We have had only a limited experience in using penicillin in the treatment of bronchiectasis. There is evidence that treatment is followed by improvement, and such a procedure is of value in the pre-operative preparation of a patient who is to undergo thoracic surgery for the removal of a lobe or lobes. It is highly questionable whether any type of therapy with penicillin will completely eliminate such an infection for an appreciable period of time.

Meningitis.—Pneumococcal meningitis is a serious disease and the untreated patient almost invariably dies. The mortality rate following the use of the sulfonamides and specific antipneumococcal serum is around 60 to 80 per cent. Treatment of a group of patients

with penicillin has resulted in a mortality rate of approximately 20 per cent. Penicillin was given parenterally, and from 10,000 to 20,000 units were introduced intrathecally every twelve to twenty-four hours. The majority of the patients also received sulfadiazine. Until further evidence to the contrary is obtained, we plan to employ the combination of penicillin and sulfadiazine in the treatment of pneumococcal meningitis.

Penicillin is very effective in the treatment of meningococcal meningitis. For the acute case, we prefer to use sulfadiazine or sulfamerazine initially, because the majority of patients will respond promptly to this therapy. If improvement is not manifested within twenty-four hours, penicillin is given parenterally and intrathecally.

Staphylococcal meningitis is also favorably affected by penicillin.

Genito-urinary Tract Infections.—We have now treated a large group of individuals having chronic types of infections which had not been eliminated by other forms of therapy including the sulfonamides. These have included cases of pyelonephritis, cystitis, and prostatitis. The causative micro-organisms were Gram-positive cocci and bacilli. Since penicillin is excreted by the kidneys, it would be anticipated that favorable results would occur in those cases where the bacteria were sensitive to penicillin. But for reasons that are not too clear, the results have not been too satisfactory. We usually use a total dose of 500,000 to 1,000,000 units in an endeavor to eliminate these infections. Perhaps this is not enough.

Subacute Bacterial Endocarditis.—The sulfonamides have yielded disappointing results in the treatment of this uniformly fatal disease. A much more optimistic outlook may be anticipated for many patients, now that penicillin is available. While our results have not been too encouraging, therapeutic failures have been due to the use of inadequate doses; the presence of a strain of bacteria which was insensitive to penicillin; and the onset of cardiac failure during or shortly after the completion of treatment. Better results may be expected in patients having an infection due to penicillin-sensitive organisms; and the continuous use of penicillin for a period of three to five weeks involving the administration of four to six million units.

Peritonitis.—While we have only treated a few patients with a combination of a sulfonamide and penicillin, it would appear that penicillin is of definite value. The material has been given parenterally. Up to the present time, penicillin solutions have not been introduced into the abdominal cavity. Because Gram positive and Gram negative organisms are present in peritonitis, the combined use of penicillin and sulfonamide therapy appears rational.

Gas Gangrene.—We have had experience with only one case. Coincident with the exhibition of penicillin, a desperately ill patient recovered. While much has been written concerning the prophylactic and therapeutic

value of penicillin in gas gangrene, the reports vary from those which cite equivocal results to those which are exceedingly optimistic. During the present war, three procedures have been used in the treatment of gas gangrene: (1) the surgical excision of involved muscle; (2) the administration of specific antitoxin; and (3) the injection of penicillin. The precise position which penicillin occupied in the lessened mortality rates is not too clear.

In conclusion, penicillin is a highly specific antibacterial agent possessing extremely low toxicity for human tissues. Other antibiotics are being investigated, and there exist good possibilities that an agent or agents will become available for the control of infections due to Gram negative organisms not affected by penicillin. Our continued hope is that such agents shall provoke as few untoward reactions as penicillin.

Discussion

DR. H. NELSON: I should like to ask Doctor Spink whether we are justified in using penicillin for prophylactic purposes in view of the limited supply for private use. In fresh compound fractures, after debridement, I have been using penicillin prophylactically by injecting 100,000 units in sterile water or saline solution, in the soft tissues about the fracture site, and have followed this up with penicillin intramuscularly for a few days. This has been used in addition to local application of sulfanilamide crystals about the fracture. Also, in certain types of surgery such as a laminectomy where there has been more than the average amount of hemorrhage, or in some bone grafts where the procedure has been somewhat involved, I have used penicillin intramuscularly for a few days. The use of penicillin prophylactically in cases of this sort, would seem justified to the surgeon and certainly does add a certain feeling of security.

I am rather interested to hear Doctor Spink's comments on the irritative effect of penicillin on open wounds and skin. I happened to have had several cases of osteomyelitis where a bone, such as the tibia, had been troughed out operatively and the sequestra cleaned up, but the area remained infected enough to be disturbing. In these cases I have been rather pleased with the effect of dropping powdered penicillin directly in the bone cavity which has, I believe, cleared up the local infection much more rapidly than with the intravenous or intramuscular administration of penicillin. I have also not noticed any irritative effect although, of course, the penicillin has not directly come in contact with the skin. I have found that there is enough secretion in the cavity to dissolve the penicillin without putting it into solution.

DR. W. W. SPINK: Although Doctor Nelson has not noted an irritating effect, we have observed signs of irritation when penicillin powder was applied to burned areas of the skin. However, Doctor Nelson has carried out essentially what the medical personnel of the British Eighth Army has done when the calcium salt of penicillin and sulfathiazole crystals were placed in wounds for prophylactic purposes. Following such a procedure, there was reduction in the number of seriously infected wounds, and no mention was made of an irritating effect induced by penicillin.

DR. R. F. MCGANDY: Do you have any ideas concerning the use of penicillin for burns?

DR. W. W. SPINK: It is well known that burns become secondarily infected as a result of changing dress-
(Continued on Page 419)

Minnesota Academy of Medicine

Meeting of February 14, 1945

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 14, 1945. Dinner was served at 7 o'clock and the meeting was called to order at 8:40 by the President, Dr. A. G. Schulze.

There were fifty-six members and two guests present. Minutes of the January meeting were read and approved.

Dr. John E. Hynes read the following Memorial to Dr. L. E. Daugherty.

LOUIS E. DAUGHERTY (1880-1945)

Louis Eugene Daugherty was born at Duluth, Minnesota, on December 12, 1880. His primary education was obtained in Duluth. He was graduated from Shattuck in 1900, entered the Medical School of the University in the Fall of 1900; was graduated in 1904, and spent a year as intern in St. Luke's Hospital, Saint Paul. From 1905 to 1909 he was associated with Dr. C. W. More in Eveleth and then returned to St. Paul and was associated with Doctors MacLaren and Ritchie. Dr. Daugherty was keenly interested in surgery and had been for some years chief surgeon of the Omaha Railroad and on the surgical staffs of Ancker and St. Luke's Hospitals as well as holding staff positions at the University of Minnesota. He was a member of the Ramsey County Medical Society and the State and National Medical Associations, the Minnesota Academy of Medicine as well as the Association of Railway Surgeons. He was a member of the Delta Kappa Epsilon and Nu Sigma Nu Fraternities.

He was married to Miss Etta Francis in 1905 who survives him. To this union was born two sons, Louis, Jr., and Frank, both of whom are in the armed service of their country which prevented them from being home to aid in composing the weary body of their father in his last earthly resting place. No finer example of selfless sustaining devotion was ever manifested than that of his faithful wife during his last illness. Dr. Daugherty's outstanding character to those of us who knew him was his love of home and devotion to his family and his profession which he practiced with the utmost skill and integrity but without ostentation. He departed this life on January 10, 1945.

Ave atque Vale! Louis.

Signed: The Committee

CHAS. D. FREEMAN

E. M. JONES

JOHN E. HYNES

* * *

Dr. Carl B. Drake read the following Memorial to Dr. Herbert Davis.

HERBERT DAVIS (1859-1944)

Dr. Herbert Davis, a practitioner in Saint Paul since 1888, became a member of the Minnesota Academy of

Medicine in 1898. His thesis, entitled "Injuries of Parturition Caused by Obstetric Forceps" was given on December 7, 1898.

Dr. Davis was born on a farm near Oshkosh, Wisconsin, April 14, 1859. To his mother, who was a lover of books, he attributed his decision to study medicine. After attending the Normal School at Oshkosh, he studied medicine at Rush Medical School and obtained his medical degree in 1880 at the age of twenty-one. Upon graduation he became company physician for the Jackson Mining Company at Nauganee, Michigan, and later was transferred first to Fayette, Michigan, and then to Two Harbors, Minnesota.

Dr. Davis came to Saint Paul in 1888 and opened an office on Selby Avenue. Soon he moved to the Moore Block at Seven Corners to share an office with Dr. Parks Ritchie. Upon construction of the Lowry Medical Arts Building he opened an office there, sharing offices at various times with Drs. Alexander Colvin, Paul Cook, Carl Teisberg, F. H. Neher, and John Abbott.

He had been an examiner for the Northwest Mutual Life Insurance Company of Milwaukee since 1899 and is said to have made some 12,000 examinations for that Company.

Dr. Davis was an ardent hunter and rarely missed a season until last fall. He could be found almost daily playing pool at the Minnesota Club and generally found time for a weekly game of poker.

Dr. Davis enjoyed a large family practice and his pleasing manner and good judgment endeared him to his patients. In spite of certain infirmities, he continued an active practice until the end, which came on November 16, 1944. He is survived by his widow, a daughter Marguerite, and a son Wallace, a veteran of World War I. One daughter, Lucile (Mrs. John M. Harrison) died in 1933.

The members of the Academy as well as the many friends of Dr. Davis will miss his genial presence.

Signed: The Committee

ERNEST M. HAMMES

EDWARD V. GOLTZ

CARL B. DRAKE

CHRONIC SUBDURAL HEMATOMA

Report of Five Cases

E. M. HAMMES, M.D.

Saint Paul, Minnesota

Subdural hematoma, either acute or chronic, usually occurs secondary to head trauma. It was first described in 1857 by Virchow, who believed that hemorrhage into the subdural space was predicated by primary inflam-

From the Neuropsychiatric Department, Medical School, University of Minnesota.

matory changes of the dura and that the hemorrhage was usually an expression of these inflammatory changes.

Bowen reviewed the literature in 1905 and stated that there was a causal relationship between trauma and

shell. In some of these no evidence of external injury was found. Along with the subdural hematoma, which was bilateral in about 50 per cent, widespread incidence of hemorrhage in the body cavities was observed in



Fig. 1.—Antero-posterior encephalogram showing marked displacement of entire ventricular system to the left due to a chronic (right) subdural hematoma.

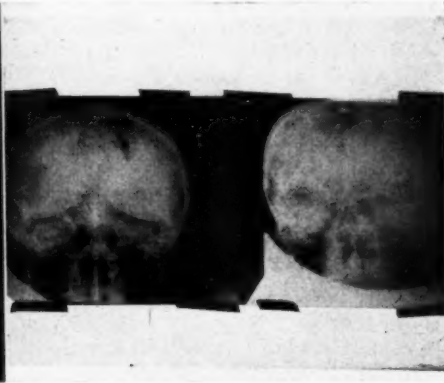


Fig. 2.—Postero-anterior encephalogram showing a large collection of gas in the subdural space between the arachnoid membrane and brain and the hematoma, pathognomonic of subdural hematoma.

subdural hematomas. In 1925 Putnam and Cushing not only called attention to the fact that most of these cases were traumatic in origin but that they could be successfully operated. Since then many excellent articles have appeared on this subject. Vance, in 512 fatal cases of head and brain injuries, found 132 subdural hematomas. In a recent article Browder observed 289 cases of subdural hematoma in a series of 18,272 cerebrocranial injuries. He came to the conclusion that an accurate diagnosis is seldom possible from the clinical features alone and that frequently associated intrinsic brain lesions produced confusing diagnostic signs.

Furthermore, definite cerebral localizing symptoms may not manifest themselves. These are probably two of the main reasons why so many cases still are unrecognized. In many instances of suspected cases, the physician delays, expecting localizing signs to develop. It is during this crucial prolonged period that serious compression of the cerebral cortex may occur, which often is irreparable in spite of successful surgery. The psychotic manifestations are usually of greater diagnostic significance and frequently occur before any organic neurological signs manifest themselves. They vary from slight personality changes and memory impairment to variable degrees of stupor to frank psychosis. Patients have been committed to mental hospitals and later on at postmortem a chronic subdural hematoma has been found.

In our present world war many similar cases will be reported secondary to head trauma of variable degree from flying fragments or blast injuries from high explosives. Abbott and his co-workers observed thirty-seven such cases, due to blasts from a nearby bomb or some cases. They also noted that the Rorschach test and the Shipley-Hartford Retreat Scale for measuring

intellectual impairment were a great aid in differentiating between subdural hematomas and the various types of war neurosis. In 80 per cent of their cases no evidence of a localized intracranial lesion could be found. Herman and his coworkers, in a study of fifty proven subdural hematomas, observed similar early psychiatric manifestations. Variable periods of confusion, dull and sluggish or irritable and uncooperative moods, along with some evidence of memory impairment were frequently noted.

The usual history obtained is that the patient had a slight or moderate trauma on the front or back of the head, the direction of the force being antero-posterior or postero-anterior. A sudden force in this direction may produce sufficient movement between the brain and the dura to rupture some of the dural veins, with subsequent subdural bleeding. The patient may be momentarily dazed or unconscious, usually the former. He recovers and remains well for days to months, then develops a gradually increasing headache, varying periods of drowsiness, with other psychotic manifestations previously mentioned. Nausea and vomiting may occur and is usually present with the more severe attacks of headaches. Inequality of the pupils frequently mentioned as a localizing sign has been rarely observed in our cases. Organic signs such as reflex changes, aphasia, mono or hemiplegia, can occur but usually during the later period. Jacksonian or generalized convulsions have been noted rarely. Slight edema or some venous engorgement may be found on examination of the fundi. Careful and frequent record of the pulse rate, temperature and blood pressure should be kept, as in all head injury cases, but usually are of no diagnostic import. Lumbar puncture may reveal a normal or xanthochronic spinal fluid with a slight increase in pressure and a moderate increase in the protein.

Roentgenological studies are of great diagnostic value. An encephalogram or ventriculogram may show a marked displacement of the ventricular system away from the side of the hematoma. Occasionally one finds a collection of air in the subdural space between the

brought to the Ancker Hospital the following day. No further history could be obtained.

On admission to the hospital he was lethargic and semicomatose. The examination was negative throughout. His temperature was 99 degrees F., pulse 82. A spinal puncture revealed a clear xanthochromic fluid



Fig. 3.—Case 2. Lateral shift to right and downward displacement of calcified pineal gland due to a left chronic subdural hematoma.



Fig. 4.—Case 2. Roentgenogram, showing collapsed cerebrum, after removal of large subdural hematoma, the resulting cavity filled with air.

arachnoid membrane and brain and the hematoma. This latter finding is pathognomonic of subdural hematoma. Occasionally the calcified pineal gland is displaced either posteriorly or downward, or laterally.

The surgical procedure best suited to most cases is multiple trephine openings, with emptying of the cyst and thorough irrigation. The great majority of these hematomata are located on the lateral aspect of the fronto-parietal region. Unless definite organic signs indicate some other region, this area is the one usually selected for trephining. Frequently subdural hematomas are bilateral and for that reason it is advisable to always investigate both sides of the skull. The prognosis for ultimate recovery is excellent, provided the diagnosis is made sufficiently early.

Case Reports

Case 1.—A man, aged sixty-seven, was brought to the outpatient department of the Ancker Hospital by the police car, at 5:00 A.M., December 31, 1944. He had been hit by an automobile, knocked down but not rendered unconscious. He had a strong odor of alcohol on his breath, his left ear was edematous, he had an abrasion over the left frontal area, ecchymosis of the left eye and a superficial laceration in the left forehead. He had no other complaints. Some metaphen and a dressing were placed over the laceration. He was taken to the Public Safety Building and the police discharged him on that day. Two weeks later, on January 13, 1945, he was readmitted to the Ancker Hospital. He had been working regularly on a farm until the day previous, January 12, 1945. He then appeared confused and was

under pressure of 300 mm. water. The fluid was normal except for an increase of protein, 59 mg. per 100 c.c. I saw him the following morning. He was stuporous but could be aroused readily and would lapse again into a stuporous state within a few minutes. While conscious he answered questions and carried out simple orders correctly. He had a marked peripheral arteriosclerosis. His cranial nerves and fundi were normal. Upper extremities were negative and he could execute all movements in the lower extremities; both knee and ankle jerks were absent. No pathologic reflexes were elicited. His neck was somewhat rigid. He gradually became more stuporous and had involuntary stools and urine. Another spinal puncture, on January 15, 1945, revealed similar findings as before. That evening he was given 100 c.c. of 50 per cent glucose intravenously, without any improvement. X-rays of the skull and chest were negative. Blood count, blood Wassermann, urine and blood sugar were normal except for a leukocytosis of 21,850. He was transferred to the University Hospital on January 18, 1945, where Dr. William Peyton removed a subdural hematoma over the left middle cerebral region, containing 3 ounces of hemorrhagic fluid. The patient is making satisfactory progress. During his stay at the Ancker Hospital his temperature varied between 99 and 102, pulse between 60 and 100; blood pressure systolic between 120 and 170 and diastolic between 60 and 80.

Case 2.—A patient under the care of Dr. W. A. Carley, a man, aged fifty-two, with negative personal history except for diabetes since 1935, was struck in the face with a fist by a soldier, on September 16, 1944. He was not knocked down or rendered unconscious. He sustained a slight bruise on his left cheek. He remained well for five weeks. He then was seen by Dr. W. A. Carley, who found him clear mentally, but dull and sluggish and he answered questions slowly. The

neurological examination was negative. He was taken to the Miller Hospital. A spinal puncture revealed clear fluid, under normal pressure. It contained one cell, a negative Wassermann, negative colloidal gold, quantitative protein 30 mg. per 100 c.c., sugar 165 mg. (The sugar increase was evidently due to his diabetes). The following day he became confused, disoriented and restless. He gradually became more stuporous and on the fifth day, 6 weeks after the accident, developed a right hemiparesis, with deep reflexes increased and a positive right Babinski. X-ray of the skull was negative. All laboratory findings were negative except for sugar in the urine. A diagnosis of a subdural hematoma was made. He was transferred to the University Hospital, where Dr. William Peyton evacuated a large subdural hematoma over the left cerebrum. The patient made a satisfactory recovery.

Case 3.—A man, aged fifty-nine, was referred to us by Dr. L. F. Woodworth, Le Center, Minnesota. His family and personal history were unimportant except that he had been a heavy periodic alcoholic for years. On May 6, while intoxicated, he had a quarrel with a young man and received a severe blow on the left eye. He was knocked down, was somewhat dazed but not unconscious. His son drove him home and he was able to walk into the house. He did not know he was at home and believed he was still down town. He slept well that night. The next noon he asked his wife what happened to his eye. On the third day following the blow he did all his work on the farm, although he appeared somewhat sullen. He continued with his daily routine without any complaints, except that he was sullen, irritable and inconsiderate. About four weeks later he stated that his tongue felt thick and stiff for about five minutes. This recurred twice during the following ten days. About this time he had a short period when "he would go into a stare." This subsided when he was spoken to. He had three similar attacks during the following week.

On June 18 he and his nephew drove a distance of 500 miles to visit his mother. The patient drove the car; he would suddenly slow down to fifteen miles an hour and seemed to be thinking of something. He gradually would come out of the spell and then speed the car up to eighty miles an hour. After this had occurred on three different occasions, the nephew drove the car the remainder of the way. The patient did not manifest any further interest during the trip. After he remained at his mother's home the periods of staring became more frequent. On July 4, two months after his injury, he developed a right hemiparesis, was semistuporous and had involuntary urination. Because he had a hypertension a diagnosis of apoplexy was made. He continued in this condition, with variable periods of improvement. He was admitted to St. Joseph's Hospital on July 25. A neurological examination was negative except for an aphasia and a hemiparesis of the right arm and leg. The fundi were normal. Blood pressure was systolic 155; diastolic 70. Blood studies, urine and blood Wassermann were normal. X-ray of the skull was normal throughout. A spinal puncture revealed clear fluid, pressure 14 mm. Hg., no bloc, three cells, negative Wassermann, negative colloidal gold curve, quantitative protein 34 mg. per 100 c.c. A diagnosis of a left subdural hematoma was made and the patient was to be operated on the next morning. During the night he had a chill, his temperature rose to 103 degrees F. and he died the following day. The postmortem findings were essentially negative except for a broncho-pneumonia. A large well-organized subdural hematoma was found over the left cerebrum, with marked compression of the left frontal, parietal and occipital lobes.

The following two cases are reported to emphasize some of the differential diagnostic problems encountered in dealing with subdural hematomas.

Case 1.—A man, aged forty-nine, referred to us by Dr. V. M. Griffen of Grand Forks, North Dakota, was in a runaway accident. The whiplash of his wagon struck a tree, he was thrown forward and sustained a slight bruise on his left forehead. He drove home, worked on the farm the following three days, but had a dull headache. Because of a pain in his right foot, he consulted his family physician, who found a fracture of the right great toe. He had no other complaints. On the tenth day after the accident he developed weakness in his right leg and his headache was more pronounced. Within twenty-four hours his right arm became similarly involved. On the twelfth day he had a generalized convulsion and his right arm and leg became flaccid. He was admitted to the hospital. He was somewhat stuporous. A spinal puncture revealed clear fluid under somewhat increased pressure but normal throughout. 100 c.c. of a 50 per cent glucose was administered intravenously. There was no improvement in his condition.

Examination the following day revealed that the patient was conscious, somewhat sluggish mentally and slightly aphasic. All cranial nerves were normal except for bilateral choked discs of two diopters. The right arm was completely paralyzed and flaccid. All deep reflexes were absent. The left arm was normal. The right abdominal reflexes were absent, left normal. The right lower extremity was flaccid, but patient could execute some movements. Knee and ankle-jerks were absent, no ankle-clonus. Babinski was negative. Sensation was normal as far as could be determined. The neck was not rigid and the Kernig sign was negative. All laboratory findings were normal. Blood pressure 145 systolic; 70 diastolic; temperature 99.6 F., pulse 70. A diagnosis of a subdural hematoma over the left parietal region was made.

A large bony flap was removed over this region. The dura was tense but of normal color. It was incised; there was no escape of hemorrhagic fluid or a gush of cerebrospinal fluid as occurs in a subdural hydroma. The brain was markedly edematous and did not pulsate. A deep-seated hematoma was suspected, a small trochar was inserted but no fluid escaped; no resistance was noted as in a tumor mass. Several small trephine openings were made on the opposite side but the dura and brain appeared normal. The patient made satisfactory progress and an uneventful recovery in two weeks. Evidently this was a case of a localized malignant cerebral edema, which responded favorably to a simple decompression operation.

Case 2.—A woman, aged twenty-seven, was admitted to the Ancker Hospital on December 28, 1944. Her family history was negative. Her personal history revealed that she sustained a fall in 1935, was unconscious for a few minutes and recovered without any sequelae; that she had an appendectomy and tonsilectomy in 1937. She had three living children and passed through her pregnancies without any complications. She has always been a highly nervous and emotional person, with considerable marital difficulties. In July, 1944, following a prolonged quarrel with her husband, she suddenly became blind but recovered completely within twelve hours. Four months ago she was informed that her husband had syphilis. Since then her worries have been more pronounced and she has been more emotional. She is right handed.

On December 14, 1944, while hanging curtains, she slipped from a chair and fell into the window, breaking the pane. She struck the top of her head against the storm window, but did not break it. She fell to the floor and was somewhat dazed. Soon afterward she got up and finished hanging the curtain. Three days later she began to have occipital headaches. These occurred at irregular intervals and gradually increased in frequency and severity and have been almost constant since December 24. On the evening of December 26 the headache was very intense; she had a stiff neck and her right arm felt peculiar and painful. The following morning, De-

ember 27, her right arm felt weak and she dropped various articles while preparing breakfast. She returned to bed, fell asleep, awakened at 8:30 A.M., got up, took a few steps and supposedly fainted. She was aroused by the shouting of her children at 10:00 A.M. Her condition continued unchanged and during that night she awakened and had difficulty in moving her right arm and right leg. She was not aphasic.

Upon admission to the Ancker Hospital the following morning, she was conscious, appeared slightly drowsy, kept her eyes closed because of photophobia. Pupils, fundi, eye movements, movements of face and tongue were normal. Her speech was normal. The left upper extremity was normal. The right upper extremity showed a moderate weakness of the entire musculature; the deep reflexes were normal, Hoffman negative; the finger to nose test was performed in an awkward manner. The abdominal reflexes were absent because of flabby musculature. The left lower extremity was normal. The right showed a moderate weakness, normal knee and ankle-jerks, no clonus, no pathologic reflexes, no ataxia. Sensation was normal throughout. There was no neck rigidity. Her temperature was 98; pulse 65. Hemoglobin 76 per cent; leukocytes 6800; urine normal; blood pressure 120 systolic; 70 diastolic; blood Wassermann negative. Spinal fluid clear, pressure 130 mm. water, no bloc, 3 cells, Wassermann negative, colloidal gold curve negative, quantitative protein 29 mg. per 100 c.c. Another spinal fluid examination of January 3, 1945, gave similar findings. X-ray of skull was negative. A diagnosis of a left subdural hematoma suspect was made. In the absence of any speech disturbance and with normal reflexes, and because of the previous history of hysterical amblyopia, further observation was suggested. By January 1, 1945, her hemiparesis had disappeared, her headache improved but she continued to be unduly worried about her condition. She was discharged on January 10, 1945. She came to the outpatient department on January 23, still complaining of left occipital headache, blurred vision and tingling sensation of the entire right side. Examination was negative throughout. She gradually improved and no further symptoms developed.

Conclusions

1. Three cases of subdural hematoma, one case of malignant cerebral edema and one of major hysteria simulating subdural hematoma are reported.
2. Attention is directed to the early psychotic manifestations and the late localizing signs as a frequent manifestation in this disease.

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Discussion

DR. WM. T. PEYTON, U. of M. (by invitation): To demonstrate the difficulty in making a definite diagnosis of subdural hematoma and to illustrate our attitude towards making trephine openings for suspected subdural hematoma, I tell you that in case I of Dr. Hammes' report I was inclined to doubt the diagnosis of subdural

hematoma, yet, because Dr. Colvin and Dr. Hammes had sent him in with this diagnosis, we made trephine openings and evacuated a subdural hematoma.

When there is a possibility of subdural hematoma we make trephine openings believing that it is better to trephine many negative cases than to overlook one with a hematoma. If no hematoma is found, no harm has been done by making these trephine openings under local anesthesia. In the case of the fresh postmortem specimen of the subdural hematoma that is being passed around among you, the patient's life would have been saved had this attitude toward trephining for subdural hematoma been adopted by the clinicians in charge. They did suspect a subdural hematoma but were deterred from operation because, on making a spinal puncture, the pressure was found to be normal and no blood was found in the spinal fluid.

The spinal fluid pressure and the intracranial pressure fluctuate together only when the cerebrospinal fluid in the cranial cavity is in direct communication with that in the spinal canal. Therefore, with an obstruction such as that which may result from herniation of the gyrus hippocampus through the tentorial notch or herniation of the cerebellum into the foramen magnum, normal spinal fluid pressure may be recorded, in the presence of increased intracranial pressure.

Blood is present in the spinal fluid in the presence of subdural hematoma only if there is associated laceration of the brain to produce subarachnoid hemorrhage, or if there is a tear through the arachnoid and into the hematoma.

A dilated pupil on the side of the lesion and bilateral neurological findings in a unilateral subdural hematoma (they are, however, frequently bilateral) can result from herniation of the gyrus hippocampus on the side of the lesion through the tentorial notch. Increased intracranial pressure forces the gyrus hippocampus through the tentorial opening at the side of the brain stem. As it is forced through this opening the third nerve comes into contact with the upper surface of the gyrus and as the herniation continues it presses on the third nerve, so that at postmortem a notch may be found on the upper surface of the herniated gyrus where the third nerve was pressed into it. When the third nerve is thus pressed upon, the function of the fibers to the iris are first affected. A dilated pupil is the best sign of the side of the lesion.

In large subdural hematomas there is extensive shift of the cerebral tissues and brain stem to the opposite side. This tends to push the cerebral peduncle of the side opposite to the hematoma against the edge of the tentorium and herniation of the gyrus hippocampus on the side of the lesion increases this crowding of the opposite cerebral peduncle against the edge of the tentorium, until eventually the function of its fibers are impaired. Then, with the cortex on the side of the lesion compressed to impair its function and the opposite peduncle notched by the tentorium, it is obvious that bilateral pyramidal tract signs may appear.

Dr. Hammes did not touch upon the controversial matter of the pathogenesis of so-called subdural hematoma. Recently some investigators have maintained that these hemorrhages are intradural hemorrhages and not subdural. This would account for the inner limiting membrane which is always found even in early cases. The inner membrane, if the hemorrhage is intradural, is of course the inner layer of the dura. It has never been adequately explained how such a membrane could form so quickly by proliferation. A progressive chronic hematoma, which followed the course of a clinical subdural hematoma, has never been produced experimentally, although many attempts have been made to produce lesions by subdural injection of blood.

I have injected intradural blood in dogs. It is difficult to do this in dogs because the dura is very thin, but, by inserting the needle through the superior sagittal sinus where blood was withdrawn into the syringe and then advancing the needle across the sinus into the

dura at the edge of the sinus, a few small hemorrhages which were microscopically similar to clinical subdural hemorrhages were produced, but they did not enlarge and progress as do clinical subdural hemorrhages.

It has only recently been realized how frequently subdural hematoma occurs in children, but now, since the pediatricians are becoming familiar with the manifestations of this condition, we are seeing many cases in infants.

The most common symptoms in infants are convulsions, irritability, and vomiting. There may be paralysis or coma, but often the symptoms are not at all suggestive of the lesion. The child may just fail to gain weight and have a fever with repeated infections. This diagnosis can then only be established or ruled out by puncture and aspiration of the subdural spaces through the open fontanelle in its lateral angles.

In adults, trephining and aspiration of a liquid hematoma is usually followed by recovery. Only rarely has it been necessary in my experience to turn a bone flap and remove blood clots.

In infants, the treatment is quite different. They should have repeated aspirations for ten days to two weeks, and then trephine openings are made to determine whether or not a membrane is present. If a membrane is present, it must be removed in order to allow expansion of the cerebrum. It is very important that a membrane is not allowed to remain in the early postnatal period when the compressed cerebrum needs room, not only for recovery from compression but also for growth.

Dr. A. R. COLVIN, Saint Paul: At the Ancker Hospital head injuries are assigned jointly to the Neurological and Surgical services, and, after consultation, when time permits, a diagnosis where one is possible is arrived at.

The differential diagnosis in acute head injuries is not early made. The first case reported by Dr. Hammes and discussed by Dr. Peyton furnishes evidence of the difficulty in diagnosis. When seen by Dr. Hammes in consultation, his notation on the chart was "probably subdural hemorrhage." Dr. Peyton, to whom the case was referred for operation, tells me he was in serious doubt. Exploratory operation by Dr. Peyton revealed subdural hemorrhage. Hanke, in a comprehensive review of the literature on subdural hemorrhage, says that in 50 per cent of his own cases the diagnosis was correct and that in the other 50 per cent the diagnosis was either wrong or was not made.

Concussion, contusion, laceration of the brain, epidural or subdural hemorrhage or a combination of two or more of them have to be considered. The lesions are liable to be multiple and many of the symptoms may be equally referable to either one of their number. The manifestations of a circumscribed lesion are often lost in those of a diffuse character and similar results constantly ensue from different causes. The seemingly more destructive lesions may not have as serious consequences as an apparently less destructive one. The effect of the sum of numerous small lesions may be more disastrous than one large lesion.

Evidence of the relative meaning of acute and chronic as applied to intracranial hemorrhage is furnished by Henschen's 163 cases of subdural hemorrhage, in which the latent interval ranged from one day to ten months and Custodi's 64 cases of epidural hemorrhage in which the latent interval ranged from one hour to six days, so that on occasion, epidural may be difficult to differentiate from subdural. Subdural occurs four times as often as epidural. Epidural, perhaps, rarely presents the classical clinical picture of the textbooks. Phelps made the statement that for anybody dying within six hours after the injury nothing could have been done to save him. A recent case has somewhat disturbed by, perhaps, too rigid adherence to this dictum.

A man admitted to the Ancker Hospital about 12:30 p.m. told a brief history of his injury which occurred about one-half hour before this time. He was taken to the ward and very shortly thereafter became unconscious. Through some failure in reciting his history to me, I was led to believe that he had not been conscious after the injury. He died unoperated upon about 6:30 p.m. The autopsy revealed a large epidural hemorrhage and a contracoup contusion of the temporo-occipital lobe. It was, of course, impossible to say what part the contusion played in the lethal ending. He had a clot of about 100 c.c. Kocher has said that 60 c.c. cause symptoms and 120 to 180 c.c. cause death.

This case emphasizes again the necessity and importance of continued and close observation by all having to do with head injuries on admission to the hospital, and the necessity also for impressing upon nurses and interns the importance of transmitting to the staff surgeon each step in the patient's progress.

In acute head injuries a provisional diagnosis is often left to time to confirm or disprove.

It is evident also that in the treatment of acute head injuries the trend is toward conservatism, i.e., there are comparatively few acute head injuries that should be operated upon. While subdural hemorrhage commonly presents a chronic problem, nevertheless, it may be part of an acute injury. Even then, however, it may become chronic. This is due to the fact that, as a rule, the hemorrhage is due to tears of the pial vessels or the cerebral vessels emptying into the longitudinal sinus and is frequently caused by a relatively mild trauma. The venous origin may also account for the slowness of the development of symptoms. This is also explained in part by the fact that in subdural hemorrhage as much as 130 c.c. may be symptomless.

Another cause for subdural or combined subdural and epidural hemorrhage is injury to a dural sinus. A recent patient at the Ancker Hospital was operated upon for a fracture of the skull. A small fragment depressed at almost a right angle was found at operation to have perforated the longitudinal sinus, and, plugging the opening, its removal was followed by profuse hemorrhage, controlled by gauze packing. This was left in place for a week. At this time attempted removal was followed by severe hemorrhage. Repacking, which was removed in another week, was curative. A tear at the edge of the sinus might easily have caused both sub- and epidural hemorrhage.

While in acute brain injuries conservatism is the rule, except for epidural hemorrhage, chronic subdural hemorrhage usually requires operative treatment.

In no other form of brain pathology are there found so bizarre, changeable clinical pictures as in subdural hemorrhage, both acute and chronic. Abbott speaks of a veritable hodge-podge of symptoms. As a consequence, it has been advised that in any case of unclear chronic illness with cerebral symptoms, it is wise to think of subdural hemorrhage, and, because of this irregular picture, in case of doubt, single or multiple trephine openings are justifiable; the more so that it is easily and safely done. But even if this be done, in case of doubt, the expert neurosurgeon, who is competent to follow through, should do the exploration when one is available. Brain tumor and abscess are, perhaps, the most common conditions causing confusion.

On account of the lateness of the hour, it was decided that Dr. Bell's paper on Primary Hypertension be postponed to a later meeting.

The meeting adjourned.

J. A. LEPAK, M.D., Secretary



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—Lt. Com. W. L. Voegtlin, USNR: N.W. Med., 43:69 (1944)



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*Silverman, D. N.; Amer. J. Digest. Dis. & Nut., 4:281-282 (July) 1937.



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REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR MAY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

Common Cold	May 2—11:00 A.M.—WLB
*Child Health	May 3—9:15 A.M.—WCCO
Medicine in the News	May 5—11:30 A.M.—WLB-KROC
Rheumatic Fever	May 9—11:00 A.M.—WLB
*Preschool Examinations	May 12—9:15 A.M.—WCCO
Medicine in the News	May 12—11:30 A.M.—WLB-KROC
Faulty Vision	May 16—11:00 A.M.—WLB
*Mental Hygiene for Children	May 19—9:15 A.M.—WCCO
Medicine in the News	May 19—11:30 A.M.—WLB-KROC
Faulty Hearing	May 23—11:00 A.M.—WLB
*Care of Children's Teeth	May 26—9:15 A.M.—WCCO
Medicine in the News	May 26—11:30 A.M.—WLB-KROC
Your Hospital in War-time	May 28—4:45 P.M.—WCCO
Glands of Internal Secretion	May 30—11:00 A.M.—WLB

**Keyed with subject of the month—Minnesota State Medical Association Packet of Information for Members.

HOUSE OF DELEGATES, MSMA

There will be no scientific meeting of the Minnesota State Medical Association this year. The House of Delegates, however, will meet Saturday and Sunday, May 19 and 20, in Saint Paul with headquarters at the Saint Paul Hotel.

Business sessions will be held in the headquarters of the Ramsey County Medical Society on the 15th floor of the Lowry Medical Arts Building on Saturday with election of officers scheduled for Sunday.

The annual banquet will be held Saturday evening at the Saint Paul Hotel, with President Edward L. Tuohy of Duluth and Lt. Emmet L. Manson, D.D.S., of Worthington, as speakers.

HOUSE OF DELEGATES, AMA

The meeting of the American Medical Association House of Delegates scheduled for May is being postponed to a later date. Announcement of the specific date will be made later.

WASHINGTON COUNTY SOCIETY

The regular monthly meeting of the Washington County Medical Society was held April 10, 1945, at Stillwater, with a good attendance. Dr. Harvey Nelson of Minneapolis was the guest speaker. His subject was "Injuries to Tendons, Nerves and Bones of the Upper Extremities," illustrated by radiographs showing lesions and results of treatment. Dr. Nelson also showed drawings to further elucidate and explain corrective procedures. He answered many questions following presentation of his talk. The discussion proved both interesting and instructive.



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MRS. ROYAL V. SHERMAN, *Editor*
Red Wing, Minnesota

STATE BOARD

The annual meeting of the Woman's Auxiliary to the Minnesota State Medical Association will be held in Saint Paul at the Saint Paul Hotel, May 17 and 18. On the afternoon of May 17 a tea will be held, and on May 18 the Annual Luncheon and presentation of the president's pin to Mrs. E. V. Goltz, the incoming president. Dr. W. A. O'Brien will be the speaker at the luncheon.

Due to the ruling of the ODT which prohibits more than fifty out-of-town people from attending, the meeting is open only to Board members and county presidents.

GOODHUE COUNTY

Mrs. T. M. Olsen, State Commander of the Minnesota Cancer Society, Inc., an affiliate of the Cancer Society and Field Army, met with the members of the Goodhue County Medical Auxiliary and chairwomen from various towns in the county at the St. James Hotel in Red Wing, April 13.

Mrs. Olsen outlined the historical background of the American Society, its aims and methods, and the goal of the Minnesota Cancer Society.

Plans were made for the raising of funds throughout Goodhue County and Red Wing. Members of the Goodhue County Medical Auxiliary who will serve as a committee are Mrs. W. W. Liffbrig, Mrs. George Kimmel, Mrs. James Brusegard, Mrs. R. V. Sherman and Mrs. R. F. Hedin of Red Wing, and Mrs. E. A. Olson, Pine Island, District Commander of the Minnesota Cancer Society.

The regular meeting of the Goodhue County Medical Auxiliary was held April 18 at the home of Mrs. R. F. Hedin.

HENNEPIN COUNTY

On April 2, the Medical Auxiliary held its annual philanthropic benefit and musical tea. The benefit bridge was held in the Medical Lounge, and the musical tea at the home of Mrs. Richard R. Cranmer. Proceeds from the benefit are to be used for the furnishing of a room at Sarahurst, a home maintained for discharged tuberculosis patients during the period of rehabilitation, and to provide generous contributions to such worthy causes as the American Red Cross, Cancer Control, and the Society for the Blind. Another project of the Auxiliary is the maintenance of a Student Loan Fund at the University of Minnesota, from which medical students are able to secure funds to carry on the study of medicine.

(Continued on Page 412)

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(Continued from Page 410)

MOWER COUNTY

The Woman's Auxiliary to the Mower County Medical Society was entertained March 26 at the home of Mrs. P. A. Lommen, Austin, Minnesota.

Mrs. C. C. Allen, president, was in charge, as Mrs. W. B. Grise reported on the recent co-ordinating council meeting held in Austin. Members reported the number of hours spent in Red Cross work and a motion was made to contribute to the Cancer Control Movement.

Facts on arthritis from *Hygeia* were presented by Mrs. Lommen. Following the meeting a social hour was held.

NICOLLET-LE SUEUR

The Nicollet-Le Sueur County Medical Society and Auxiliary held a joint meeting in March.

Mrs. Lawrence Sjostrom of St. Peter, presided at the Auxiliary meeting. Mrs. Hobart Johnson was in charge of a Cancer Control program which was presented. April has been designated cancer control month throughout the nation, and funds are to be raised for this work. Complete co-operation of the Nicollet-Le Sueur auxiliary was pledged. Mrs. Johnson attended a cancer control course which was held recently at the University of Minnesota.

Several vocal solos were sung by Mrs. Victor Bernhardson. Following the meeting refreshments were served at the home of Dr. and Mrs. C. F. Wohlrabe.

ANTI-BLEEDING MATERIAL

A new anti-bleeding material which may be useful in shock, in hemophilia and to stop bleeding during surgical operations is announced by Dr. Alfred Lewin Copley, of the University of Virginia School of Medicine (*Science*, April 27).

Before it can be tried in patients with hemophilia, the hereditary bleeders' disease, "extensive studies will have to be conducted," Dr. Copley states.

In the test tube, a small amount of the material rapidly clots hemophilic blood. It also almost instantly stops bleeding from cut surfaces, it was found during operations on animals.

This anti-bleeding material was obtained from blood plasma and also from human placentas. A single placenta yields a large amount of the anti-bleeding substance. The latter is called thromboplastin because it acts, along with calcium, on the prothrombin of the blood to convert it into thrombin. It is thrombin which converts fibrinogen into fibrin to form the clot when blood is shed.

The possible anti-shock usefulness of the anti-bleeding material was discovered when it was used successfully to treat six dogs suffering from peptone shock. This suggests that it may be useful in treating anaphylactic shock, the kind that sometimes comes following injections of horse serum containing vaccines. In this part of the study the thromboplastic substance was used in the form of a protein compound although a protein-free material was also obtained.

Other scientists have previously reported extracts from human placentas with some degree of anti-bleeding material and a more active substance was also obtained from pig's lungs.—*Science News Letter*, May 5, 1945.

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◆ Of General Interest ◆

Dr. T. O. Wellner has closed his practice in Rochester and has left the city.

* * *

Dr. J. L. Bollman, Mayo Clinic, attended the conference on liver injury held at the Macy Foundation in New York City.

* * *

Dr. Wilfred McKechnie has taken over Dr. J. C. Poore's practice at Isle. Dr. Poore was recently inducted into the U. S. Navy.

* * *

There is a critical shortage of x-ray films occasioned by increased army and navy demands. Physicians are urged to economize in the use of films.

* * *

Dr. Charles Sheard, Mayo Clinic, has been elected a member of the Board of Directors of the National Society for the Prevention of Blindness.

* * *

Dr. T. E. Broadie, Ancker Hospital, Saint Paul, has been made a member of the National Committee for the Consideration of the Care of the Chronic Ill.

* * *

"Recent Developments in Anesthesia" was the subject of a recent address given by Dr. John S. Lundy, Mayo Clinic, at the Percy Jones General Hospital at Battle Creek, Michigan.

* * *

A citation for outstanding work in the Belgian Drive has been conferred on Captain John L. Stennes, Minneapolis. Captain Stennes, a medical officer in the paratroopers, has been in overseas service for eight months.

* * *

Dr. Paul Arthur O'Leary, Mayo Clinic, addressed the Wartime Graduate Medical Meeting, held at Des Moines, Iowa, on April 11. His subject was "Common Dermatologic Problems." Dr. O'Leary also took part in a round-table question and answer period.

* * *

Dr. L. A. Brunsting, Mayo Clinic, was a guest speaker at the Southern Forum of Allergy in New Orleans on April 2. During the same week, Dr. Brunsting gave the annual Le Roy Long Lecture at the School of Medicine, Oklahoma University, Oklahoma City.

* * *

Dr. H. J. Moersch, Mayo Clinic, presented papers on "The Use of the Esophagoscope in the Diagnosis of Esophageal Disease," and "Bronchoscopy in the Diagnosis of Bronchial Disease" at the Wartime Graduate Medical Meeting held at Fort Snelling on April 10.

Dr. L. W. Johnsrud of Hibbing has been made a licentiate of the American Board of Surgery. Dr. Johnsrud took part of the competitive examinations required for appointment last fall in Rochester and completed them in Chicago in the early spring.

* * *

Dr. Roger L. Kennedy, Mayo Clinic, discussed the program of the Committee on Child Health of the Minnesota Medical Association at the April meeting of the medical societies of Wabasha and Winona Counties.

* * *

Dr. Kenneth Kelly, who completed his internship at the Swedish Hospital in Minneapolis during the spring, is now in private practice in Grove City. The marriage of Dr. Kelly to Miss Viola Carter, of Ada, Minnesota, was an event of April 2, 1945.

* * *

In recognition of his outstanding contribution to the work of Aeronautics, Colonel W. Randolph Lovelace, II, Mayo Clinic, has been elected a Fellow of the Institute of Aeronautical Sciences. This is an honor attainable only through unusually valuable work in this field of medicine.

* * *

After almost two years' absence in military service, Dr. D. W. Pollard resumed his duties as superintendent of the Minneapolis General Hospital on April 1. Dr. Pollard, a major in the Army Medical Corps, served at Kennedy General Hospital in Memphis, Tennessee, and other hospitals throughout the South.

* * *

Congratulations for a half century of service were presented to Drs. W. F. Wilson and W. J. Cochrane, both of Lake City. Dr. Wilson is now in his fiftieth year as secretary of the Wabasha County Medical Society, and Dr. Cochrane is rounding out his fiftieth year of medical practice.

* * *

Minnesota's quota in the April fund-raising campaign to fight cancer is \$135,000. The national goal is \$5,000,000. The deaths from cancer in Minnesota alone last year reached nearly 4,000. Besides providing funds for research, periodic examinations to further early detection of cancer will receive publicity.

* * *

Dr. Max Tenen, who graduated from the Minnesota University Medical School in 1941, has opened offices in the Sanford Hospital Building in Fairmont. Following completion of his internship at the Minneapolis General Hospital, Dr. Tenen took postgraduate work at the Receiving Hospital in Detroit, Michigan.

(Turn to Page 416)

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Dr. F. E. Harrington, acting superintendent of the Minneapolis General Hospital during the absence of Dr. F. W. Pollard on military leave, has been appointed superintendent of the Elizabeth Kenny Institute. Dr. Harrington was city health commissioner for Minneapolis from 1920 until he retired on June 19, 1944.

* * *

The marriage of Miss Nelda Kanne, daughter of Mrs. C. W. Kanne of Faribault, to Dr. Douglas Lindsay, son of Mr. and Mrs. M. I. Lindsay, Minneapolis, took place on March 26 at the Hennepin Avenue Methodist Church in Minneapolis. Dr. Lindsay is now serving his internship in the Department of Pediatrics, University of Minnesota Hospitals.

* * *

Dr. E. D. Morehead, of Owatonna, is one of the fifty American delegates who will attend the Fifth International Assembly of the International College of Surgeons which will be held in Peru in September. Dr. Morehead will present a paper on "Surgery of the Acute Gall Bladder," and one on "Treatment of Fractured Hips with the Smith-Peterson Nail."

* * *

Dr. F. A. Willius, Mayo Clinic, addressed a dinner meeting of the staff of St. John's Hospital at the Minnesota Club, Saint Paul, April 26, 1945, on the subject of the electrocardiogram. He emphasized the fact that the electrocardiogram is not the final word in the diagnosis of heart disease, but that the medical history and the physical findings are still of diagnostic importance.

* * *

Announcement has been received of the appointment of Captain C. H. Watkins (MC), USNR, as Clinical Administrator of all Services at the U. S. Naval Hospital, Charleston. Captain Watkins, an associate of the Mayo Clinic prior to his induction into the armed forces, was previously executive officer at the U. S. Naval Hospital at Corona, California. He also served overseas for some time.

* * *

Dr. William J. Hruza, Minneapolis, who, since his induction into the armed forces, has been on duty in the Pacific theater, served in the Mariana campaign and at Iwo Jima. He reports that the wounds suffered at the latter battle were far more severe than any he treated in the Marianas. A Minnesota graduate, Dr. Hruza is a lieutenant (jg) in the Fourth Marine Division.

* * *

The eleventh annual anniversary dinner of the Saint Paul Surgical Society was held at the University Club, Saint Paul, April 18, 1945. Dr. George M. Curtis, Professor of Surgery, Ohio State University, Columbus, Ohio, addressed the society on "Surgery of the Spleen." Dr. Curtis gave most interesting discussions on the subject of the spleen and thyroid on several occasions during his recent visit to the Twin Cities.

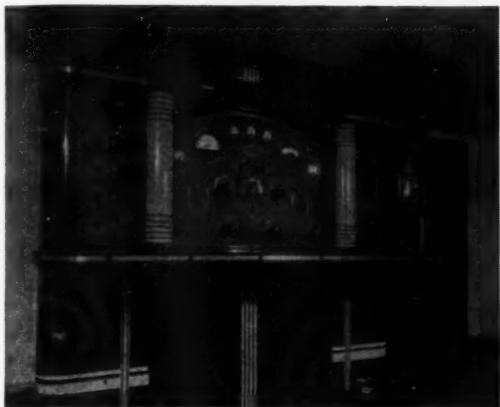
(Turn to Page 418)

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In order to observe the effects of take-off and landing, Lieutenant Colonel Harry P. Harper, chief of an American field hospital in Germany, accompanied the first glider load of wounded men rescued from the Remagen Bridgehead in Germany. Colonel Harper is a former fellow in surgery at the Mayo Foundation.

Major Wilson Weisel, also a former surgery fellow at the Foundation, is stationed at the same hospital.

Plans for the proposed Mayo Memorial were discussed by Dr. Harold S. Diehl, dean of medical sciences, University of Minnesota, at a meeting of the doctors of Cass, Clearwater, and Koochiching Counties in Bemidji on April 7. Dr. Diehl discussed the plans with members of the profession of St. Louis and Itasca Counties at a meeting held in Hibbing on April 8.

Dr. Arthur Colberg, physician and surgeon, who returned to this country in 1943, after seventeen years as a medical missionary in China under the Augustana Lutheran Board, has opened offices at 2300 Central Avenue in Minneapolis.

Dr. Colberg is a graduate of the University of Minnesota Medical School. He served his junior internship at Ancker Hospital in Saint Paul and his senior internship at Rockefeller Hospital in Peiping, China, and is licensed for practice in California as well as Minnesota.

Dr. R. V. Williams, formerly of Rushford, who moved to Indiana in 1943 and later to Chicago, is now practicing in Kankakee, Illinois, temporarily, because military induction of doctors in that city left the residents without medical service. Dr. Williams, whose offices are at 309 Arcade Building, will remain in Kankakee until a doctor can be found to take over the work on a permanent basis, or failing this, until at least one of the three regular physicians is released from military service.

Dr. Erling Ostergaard, a 1926 graduate of the University of Minnesota Medical School, has joined the staff of the Estrem Clinic at Fergus Falls for the duration of his leave from his missionary post in India. Dr. Ostergaard, who returned with his family from India last fall, is chief physician and surgeon of a seventy-bed hospital at the Santal Mission, where he has served for sixteen years.

In addition to his clinic duties, Dr. Ostergaard expects to make several lecture tours through the midwest in behalf of his mission work.

The medical societies of Wabasha and Winona Counties, the Tuberculosis Commission and the staff of the sanatorium at Buena Vista met at the sanatorium in their twelfth session on April 2.

Prior to a joint dinner, the various groups gathered separately for consideration of their particular business. Following the dinner an interesting scientific program, arranged by Dr. D. O. N. Lindberg, superintendent of

MINNESOTA MEDICINE

OF GENERAL INTEREST

the sanatorium, was presented. Dr. C. G. Oschner, president of the Wabasha County Society, presided.

Papers were read by Dr. Viktor O. Wilson, director of the Division of Child Hygiene, Minnesota Department of Health, Dr. Roger Kennedy, of the Mayo Clinic, and Dr. Lindberg.

* * *

A Minneapolis physician, Commander Horatio B. Sweetser, is chief of medicine on the first American hospital ship that landed at Iwo Jima. The ship, which is staffed with twenty-two doctors, arrived at the island on the morning after D-Day. It immediately began transferring the wounded to Guam and Saipan for hospitalization and remained in continuous service for the duration of the fighting. A Japanese shell—an armor-piercing projectile—fired into the shipping struck the ship's superstructure but, fortunately, it was a dud and landed harmlessly at the bottom of the ventilating shaft.

The work at Iwo Jima completed, the ship was ordered to Okinawa, and later nearer to the equator, where Commander Sweetser found it very hot.

* * *

Minnesotan Decorated

The Legion of Merit has been awarded to Colonel Karl R. Lundberg, MC, U. S. Army, for outstanding service in the "development of the present program for vaccination against infectious diseases and the general control of infectious diseases among troops."

Colonel Lundberg, a 1925 graduate of the College of Medicine, Minnesota University, is stationed at New Delhi, India, where he is India-Burma Medical Inspector and Chief of Preventive Medicine in SOS Headquarters.

MINNEAPOLIS SURGICAL SOCIETY

(Continued from Page 400)

ings. For this reason, penicillin has been injected parenterally as a prophylactic measure. Such lesions are not infrequently invaded by hemolytic streptococci and staphylococci, and under those circumstances penicillin should be of value. Solutions of penicillin have also been used topically in the treatment of burns. I have seen this carried out in a few patients, and I have not been too favorably impressed by the results, probably because the lesions were the site of a mixed type of infection.

DR. L. C. CULLIGAN: Do you think that intramuscular penicillin should be used prophylactically in case of ruptured appendices where sulfanilamide has been used locally?

DR. W. W. SPINK: As I stated previously, there are indications that penicillin should be used systemically for peritonitis. But at the same time, I would use one of the sulfonamides, preferably sulfadiazine or sulfathiazole, and I would give the sulfonamide parenterally rather than placing it in the peritoneal cavity.

DR. C. E. MERKERT: Has anyone at the University Hospital used penicillin in the peritoneal cavity following a ruptured appendix?

DR. W. W. SPINK: As far as I know, that has not been done. It probably would be more advantageous to use the penicillin parenterally.

MAY, 1945



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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Books Received for Review

DOCTORS AT WAR. Morris Fishbein, M.D., Editor of *Journal of the American Medical Association*, and of *Hygeia*; chief editor of *War Medicine*; chairman of the Committee on Information of the Division of Medical Sciences of the National Research Council. 418 pages. Illus. Price, \$5.00, cloth. New York: E. P. Dutton & Co. Inc., 1945.

BEDSIDE CLINICS. Francis D. Murphy, M.D., F.A.C.P. Professor and Head of Department of Medicine of Marquette University Medical School and Clinical Director of Milwaukee County General Hospital and Emergency Unit. 185 pages. Price, \$3.00, cloth. Milwaukee: Marquette University Press, 1945.

PENICILLIN THERAPY, Including Tyrothricin and Other Antibiotic Therapy. John A. Kolmer, M.S., M.D., Dr.P.H., Sc.D., LL.D., L.H.D., F.A.C.P. Professor of Medicine in the School of Medicine and the School of Dentistry, Temple University; Director of Research Institute of Cutaneous Medicine; Formerly Professor of Pathology and Bacteriology, Graduate School of Medicine, University of Pennsylvania. 303 pages. Illus. Price, \$5.00, cloth. New York: D. Appleton-Century Co., 1945.

EXAMINATION OF REFLEXES. Robert Wartenberg, M.D. Foreword by Foster Kennedy, M.D. 222 pages. Illus. Price, \$2.50, cloth. Chicago: Year Book Publishers, Inc., 1945.

CONTROL OF PAIN IN CHILDBIRTH. C. B. Lull and R. A. Hingson. 356 Pages. Illus. \$7.50. Philadelphia: J. B. Lippincott Co., 1944.

When one recalls that one author of this book is a leading obstetrician, and the other, one of the discoverers and promoters of caudal anesthesia, one might justly conclude that this volume gives great prominence to caudal anesthesia as a method of pain control in childbirth. This conclusion may be correct, but it is not quite justified when one considers the merits of the book as a whole. It is true that in Part One, dealing with the anatomy of the organs of parturition, all but about two of its twenty-five pages are devoted to the vertebral column, sacrum, sacral canal, with illustrations of over thirty sacri.

The authors discuss fully all types of pain control, inhalation anesthetics of all kinds, the barbiturates, intravenous anesthesia, local anesthesia, rectal anesthesia and paraldehyde, spinal anesthesia, and of course caudal anesthesia. They also discuss fully the type of anesthetic that is best suited to all the complications that arise in pregnancy, including upper respiratory infections, cardiac disease, the different types of toxemia, the various blood diseases, hemorrhage during pregnancy, cesarean section, et cetera. One can hardly think of a complication arising during pregnancy for which the authors do not advise what, in their experience, has proven to be the best anesthetic. In Chapter Two the

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authors give a series of illustrations, fourteen in number, where they attempt to show by different colors and shading the stimulating and the depressing effects which the various anesthetics have on the organs of the mother and the baby, such as the brain, respiratory center, lungs, heart, liver, kidneys, adrenals, and of course on the uterus of the mother.

This is a very good book and covers the subject well. Inside the back cover is a list of antidotes to be given for overdosage.

ALBERT G. SCHULZE, M.D.

PATHOLOGY OF LABOR, THE PUERPERIUM AND THE NEWBORN. Charles O. McCormick, A. B., M.D., F.A.C.S., Clinical Professor of Obstetrics, Indiana University School of Medicine; Consulting Obstetrician to William H. Coleman Hospital for Women, Indianapolis, and Sunny Side Sanitarium. 382 pages, with 191 illustrations including 10 in color. Price \$7.50. St. Louis: The C. V. Mosby Company, 1944.

This is a very concise small textbook; it is a condensation of a series of the author's lectures prepared for the Senior Medical Students at Indiana University. Only the essentials of present-day obstetrics are presented; however, a considerable number of selected references are found throughout the text which are valuable for collateral reading.

Illustrations are profuse and of excellent quality for teaching purposes. All the obstetric operations are illustrated, including Cesarean section. The various methods of obstetrics are described including a rather full outline of the technique in continuous caudal anesthesia.

MAY, 1945

There is a short section devoted to the pathology of the newborn including birth injuries, malformations and a short section on erythroblastosis fetalis considering the RH factor.

The book is well written, complete and of particular value to medical students, interns, and to the older men who want an up-to-date review of modern obstetrics.

JAMES R. MANLEY, M.D.

JOHNSTON LECTURE ON NEUROLOGY

The first J. B. Johnston Lecture on Neurology was given by Dr. O. Larsell of the University of Oregon Medical School at 8:15 P.M., Friday, May 11, at the Auditorium of the Museum of Natural History, University of Minnesota. The subject of the lecture was: Comparative Neurology and Our Present Knowledge of the Cerebellum.

The lectureship was endowed by Mrs. Johnston in memory of her husband who was an outstanding comparative neurologist. Dr. Larsell is an outstanding authority on the morphology and significance of the different lobes of the cerebellum.

On Thursday, May 10, at 5 P.M., in the amphitheatre of the Institute of Anatomy, Dr. Larsell gave a lecture on the History of Medicine in the Northwest, a subject in which he has been particularly interested for many years. He is planning to publish his findings in book form in the near future.



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OBSTETRICS—Two-Week Intensive Course, June 4.

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